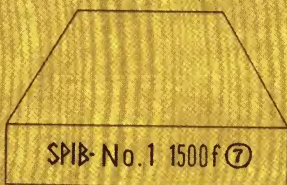


1963

STANDARD GRADING RULES

for
**SOUTHERN
PINE
LUMBER**



Conforming to
AMERICAN LUMBER STANDARDS

EFFECTIVE FEBRUARY 1, 1963

Published by
SOUTHERN PINE INSPECTION BUREAU
New Orleans, Louisiana

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Effective February 1, 1963
(Supersedes all previous editions)

APPROVED BY THE BOARD OF REVIEW
OF THE AMERICAN LUMBER STANDARDS COMMITTEE

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FOREWORD

The Southern Pine industry is distinctive not only in relation to the superior wood it produces but with respect to the many unique grading and inspection policies that are reflected in these rules and followed by the Southern Pine Inspection Bureau. This branch of the softwood lumber industry was the first to—

- Encourage grade-marking in the interest of fair competition and for the protection of lumber buyers.
- Include maximum moisture content provisions in grading rules.
- Check shipments at delivery points as part of system of policing performance of mills authorized to use registered SPIB grade-mark.
- Financially guarantee its certificate inspections.
- Provide all-purpose grades with working stresses for all loads regardless of size or length of member.

The grading and inspection program of the Southern Pine Inspection Bureau constitutes an effective manufacturing and merchandising mechanism. It also is viewed as a public trust, with full protection afforded to buyers and sellers alike. Lumber specifiers and buyers are urged to familiarize themselves with these rules and take full advantage of the inspection and other helpful facilities provided by the Southern Pine industry.

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SPIB

SERVICES

The Southern Pine Inspection Bureau, a non-profit organization, is dedicated to the maintenance of high standards in the Southern Pine lumber industry. Its financial support is derived wholly from the manufacturers of Southern Pine but the benefits of this program extend to everyone engaged in the production, sale and distribution of Southern Pine as well as to lumber specifiers and buyers generally.

Grading Rules and Inspections

An important function of the Bureau is the formulation and publication of standard grading rules for Southern Pine lumber. More than 95% of the production of the industry is classified and sold according to these rules. The Bureau also maintains an adequate and competent staff of inspectors, whose services are readily available on equal terms to all buyers and sellers of Southern Pine for the settlement of grade complaints and for the inspection and certification of grades.

The inspection staff of the Bureau also supervises the grading and shipping practices of the mills of its subscribers or members. Through the training and coaching of mill graders, the Bureau assists the mills in maintaining a high degree of efficiency in grading and in observing the requirements of the rules in all shipments. Those manufacturers who can demonstrate their capacity and willingness to observe the established standards are licensed to use the SPIB grade mark on their lumber.

Grade Marking

As the grading of lumber requires special skill

and experience, there are wide opportunities in most markets for the substitution of inferior qualities and the use of lumber that is improperly seasoned or otherwise below grade. To protect the buyer, the industry has developed a system of grade marking each piece under adequate quality control measures which assures the delivery of the grade specified.

Grade marked Southern Pine bearing the SPIB symbol is required to conform to all of the provisions of these rules. The symbol signifies that the lumber has been inspected and grade marked either by a Bureau inspector or by graders at licensed mills whose grading practices are regularly supervised by the Bureau. The entire system of SPIB grade marking has been approved as conforming to American Lumber Standards requirements.

SPIB grade marking mills have assumed the obligation to correctly grade their lumber whether or not grade marked, to permit their shipments to be examined by the Bureau at delivery points, to pay the cost of inspection when the lumber is below grade and to abide by the Bureau inspection report. It is customary for buyers to report complaints to their suppliers and this is the recommended procedure, but if any difficulty is experienced the buyer is invited to report directly to the Bureau. The SPIB grade marks are registered under the Federal Trade Marks Act, which provides full protection against the unauthorized use or infringement of these marks. The Bureau always is interested in having the privilege of investigating any grade marked Southern Pine of questionable quality.

Certificates and Claims

The inspection services of the Bureau are available to subscribers and nonsubscribers alike on a uniform and reasonable basis.

Certificate inspections are performed only by members of the Bureau staff, who inspect the lumber for grade and then place an identification mark on each piece certified. A certificate is issued, describing the grade of the lumber. To the extent that conditions permit, the Bureau inspector will tally the lumber and check its

loading, but inspection is his primary responsibility. If conditions prevent him from giving time and attention to the loading and tallying, the shipper's load and count are accepted and the correctness of this is the responsibility of the shipper. (Specimen copy of certificate, page 30.)

When grade marking is required, the Bureau inspector will stamp each piece with a mark showing the SPIB insignia, the grade name and a number identifying the inspector. Thus, any manufacturer, wholesaler or retail lumber dealer may take orders that require SPIB grade marking, and arrange for the lumber to be inspected and marked at a nominal charge representing only the cost incurred in rendering the service.

Financial Guarantee

SPIB certificate inspections are guaranteed against degradés and shortages due to the carelessness or inefficiency of the inspector, but are not necessarily guaranteed against degradés or shortages that may accrue after inspection. This guarantee applies to all standard grades under these rules. It does not apply to lumber shipped outside of customary domestic trade areas.

If the grades set forth in the certificate should be questioned, and if upon reinspection the original inspection is not sustained, the Bureau will assume responsibility for the loss represented by the difference between the mill price with freight allowed to destination and the resale realization of the offgrade. The guarantee is contingent on the willingness of participants in the transaction to lend all reasonable assistance to facilitate the reinspection of the lumber and the disposition of the offgrade.

The quality of certificated lumber at the time of delivery to the buyer is dependent on the extent to which such lumber was conditioned and stabilized at the time of inspection, on the competency and dependability of the inspector, and on the care taken to prevent subsequent damage and deterioration. The competency and dependability of the inspector are the responsibility of the Bureau, but the adoption of measures to safeguard the quality in other respects must be the responsibility of the seller.

Southern Pine Properties and Characteristics

ALWAYS PLENTIFULLY AVAILABLE. Southern Pine grows over a wide area from Maryland to Texas. It represents about one-fourth of the nation's total softwood production. The producing states are blessed with weather ideally suited to timber growing. There is no longer any question about the continuous availability of a plentiful supply of Southern Pine for all time to come.

GOOD QUALITY OF CURRENT GROWTH. The Southern Pine that is being cut today reveals a remarkable aspect of the nation's forestry experience. The transition from old-growth production to a basis of harvesting the trees as they mature has taken place without any let down in quality. In the current output there is a noticeable absence of the inferior characteristics often found in overripe timber. From here in, Southern Pine will continue to afford the same high qualities that so long have been associated with it.

BEAUTY OF GRAIN OR FIGURE. Southern Pine always has been noted for its distinctive and eye-appealing pattern of grain. This is particularly desirable when natural finishes and stains are used. In extolling the merits of the wood, dealers have stated that it is "preferred because its figure takes stain well, and being a bit harder, it doesn't mar so easily." Many generations of satisfied users will attest to the lasting charm and beauty of Southern Pine.

DOES NOT MAR OR SCAR EASILY. Here is another good reason for the popularity of Southern Pine for interior mouldings, trim and finishing lumber, which often are subjected to abuse. Southern Pine can take a great deal of

punishment without showing ill effects from wear and tear. It is not surprising that this species is the first choice for finishing purposes.

HIGH STRENGTH PROPERTIES. Southern Pine justly merits the designation "Supreme Structural Wood of the World," because it ranks in many strength properties as the strongest of softwoods. An over-all gauge of its strength for comparison with other species is provided by its average specific gravity. This average figure includes the weaker pieces encountered, as well as pieces of average and higher strength. Usually a great deal of extra value or good measure characterizes any representative lot of Southern Pine.

MEDIUM-GRAIN WOOD RATES HIGH. Because of the greater inherent strength of Southern Pine the medium grain requirement is adequate for most uses. Its purpose is to exclude questionable pieces. As a general rule, the specific gravity* of medium grain Southern Pine ranges from .40 upward to the species average of .49 and higher. Only occasionally is a piece lower than .40 encountered although the strength calculations contemplate that some pieces may be as low as .35 specific gravity. Thus, the medium grain quality may be depended upon for extra value not reflected in the stress rating.

DENSE LUMBER RATES EVEN HIGHER. When the lumber is dense, all strength ratings involving bending, compression and tension stresses are very much higher. The calculations for dense quality contemplate the possibility of some pieces being as low as .40 in specific gravity, yet most of the lumber that is excluded by the application of the density rule will have specific gravities well over .40. The average specific gravity for dense Southern Pine is .54, which is above the .49 average for the whole range of the species. Dense lumber, therefore, provides some very tangible extra premium values.

*Specific gravity figures are based on oven-dry weight and green volume.

BONUS VALUES UNDERESTIMATED. It is not generally realized how full is the measure of superior qualities in dense and medium grain Southern Pine. As the specific gravity gets higher, strength properties increase just as fast or even faster. If the specific gravity increases 25%, the crushing strength as a post increases 25% also, but the bending strength as a beam increases 37½%, and the hardness increases 100%. Many users of Southern Pine are capable of making their own specific gravity tests. Thus, they can verify for themselves how large a bonus they derive from using Southern Pine.

LONG-LASTING UNDER HEAVY WEAR. Southern Pine has what it takes to stand up well when used for heavy duty flooring. It gives equally good service as decking for boardwalks and for railroad platforms and freight-car flooring. It not only wears well under severe service conditions, but is very resistant to splintering, thus affording another important safeguard against damage. For all heavy duty purposes, Southern Pine is the favored wood.

HIGH BOLT- AND NAIL-HOLDING POWER. This property is a prime asset of Southern Pine. It is doubly important in the framework of a structure because the framework depends not only upon the strength of the individual members comprising it, but on the strength of the bond that ties them together. Even though a structure may never have to withstand the force of a cyclone or hurricane, it is satisfying to know that it is strong and sturdy as a result of having been properly fabricated with dry Southern Pine.

FASTENINGS ALWAYS IMPORTANT. There are many other parts of buildings besides the framework where nail-holding power is important. Southern Pine generally is the preferred wood for roof sheathing because it keeps a firm grip on the roofing nails. Similarly, it is highly satisfactory when used as subflooring as it may be relied on to hold the flooring nails securely. Even screen doors are more serviceable when made of Southern Pine through the advantage accruing from its nail and screw-holding power.

HIGH RETENTION OF WOOD PRESERVATIVES. Another outstanding quality in Southern Pine is its ability to take pressure treatments, and what is more remarkable, to retain them up to 20 # per cubic foot. Such treatments demonstrate their worth for all wood used in coastal waters where marine borers otherwise would riddle the wood within a relatively short time. The deep penetration possible in Southern Pine permits normal handling without any impairment of protection against moisture, decay, termites, marine borers, etc. In the hard-to-treat woods that can take only a thin outer-shell treatment, even seasoning checks can puncture the treated area and thus permit moisture and decay-producing fungi to reach untreated wood. Southern Pine's capacity for performing satisfactorily under these conditions accounts for its popularity in such uses.

HEAVY TREATMENT AN EXCLUSIVE FEATURE. Because it takes treatment so well, Southern Pine frequently is given more than the conventional 8 #, 10 # and 12 # per cubic foot, which are the maximum that most other woods will take. Where treatments above 12 # are needed for particular uses, they are readily available in Southern Pine. With only 12 # per cubic foot, Southern Pine is equal to or better than any other softwood having the same treatment. Treatments of 14 # or higher give Southern Pine marked superiority over woods that will not take more than 12 #.

DRYNESS IS STANDARD QUALITY. Southern Pine is in a distinctive position in having definite provisions in the grading rules requiring all lumber up to 2" thick to be reduced to or below a specified maximum moisture content prior to the time of dressing and shipment. This is not something new, as these restrictions have been included in Southern Pine rules for more than thirty years. Green lumber often is offered for sale and buyers therefore should be on guard to specify and make certain that they receive only a properly seasoned product.

SEASONING INCREASES STABILITY. As lumber degrades to some extent during seasoning, it is better for this degrading to take place prior to the purchase rather than afterwards. Also, lumber shrinks during seasoning and its subsequent stability and fitness for service is dependent upon the adequacy of the seasoning. Again, unseasoned lumber is particularly susceptible to attack by decay-producing fungi, while on the other hand well-seasoned lumber if kept dry and used continuously dry, as in most covered structures, will not rot or decay. Dryness affords protection at every stage in the distribution, storage and final use of lumber.

DRY LUMBER IS STRONGER. Test data of the U. S. Forest Products Laboratory prove that all of the strength properties of all species of wood are greatly increased when the lumber is dry. This is just another reason for making dryness a standard quality requirement for all Southern Pine lumber up to 2" thick. It is comparatively easy to dry such lumber, and the cost is not prohibitive. Actually the cost is fully justified on a basis of increased strength alone—to say nothing of the many other benefits that accrue as a result of drying.

DRY LUMBER FOR BETTER BUILDING. Under any and all conditions of use the performance of even mediocre workmen is better when dry lumber is used. On the other hand, skilled carpenters often turn out shoddy jobs when the lumber is not properly seasoned. Here is what the U. S. Forest Products Laboratory has to say in an article entitled "Good Wood Houses Are Built of Dry Lumber": "We have been building houses since our ancestors first landed in this country and have learned to build better houses than they built, but we still have not learned how to build good houses of unseasoned lumber Time and money expended to get dry lumber . . . will pay good dividends in reducing maintenance and increasing the value and satisfaction of ownership of the completed structure."

SEASONING INCREASES GRIP ON NAILS. Some lumber species are endowed with far better properties for nail and bolt holding than others. Regardless of species, however, a tremendous increase in nail-holding power results from seasoning. If nails are driven into green wood they will lose their grip as the lumber dries out, and thus become much less efficient as fasteners and may cause a serious weakening in joints. It is only when fully seasoned lumber is used that the maximum potential power of any species for holding nails and bolts can be attained.

DRY LUMBER MEANS BETTER INSULATION. This is just another good reason for requiring framing and sheathing to be thoroughly seasoned. If either of these items is used wet or unseasoned, shrinkage will take place as it dries in the structure. This shrinkage can cause cracks and openings sufficient to permit a very noticeable passage of air through the walls. When this happens, it may necessitate much extra expense for heating and cooling. A simple and economical solution is to be doubly sure that only dry framing and sheathing are used.

SATISFACTORY PERFORMANCE IN SERVICE. The seasoning of lumber at the producing mill represents an extremely important step in assuring satisfactory performance in service, but it is important also that the lumber be protected in transit, in storage, and at the job site. Covered storage provides the best means for avoiding conditions that would tend to increase the moisture content of the lumber. Where covered storage is not feasible, proper stacking and stickering will greatly minimize the disadvantages of open storage. Experience through the centuries has established the fact that properly stacked dry lumber is highly resistant to deterioration.

DISTRIBUTORS AND CONTRACTORS CAN HELP. Lumber swells or shrinks only because of changes in its moisture content. It should be properly cared for both at the retail yard and on

the job. The Southern Pine industry goes to great lengths in endeavoring to make and ship a product that will be serviceable in use. All who distribute and handle lumber should do their part in keeping it that way.

A GOVERNMENT-APPROVED FORMULA—

“There may be made available by said Southern Pine Inspection Bureau to all manufacturers of Southern Pine lumber who may subscribe to the services of said Bureau, whose mills are able to prove their efficiency in grading and manufacturing according to the rules and regulations of the Bureau, and who agree to maintain and thereafter do actually maintain its established standards of size and grade and submit their products to Bureau inspection both at the mill and upon complaint at destination, an easily applied distinctive Bureau designation signifying Bureau grading supervision and conformance to its established grading rules and standards, for use by such mills in conjunction with a mill identification number and grade name.”



A typical grade mark showing registered SPIB insignia, grade name, and identification number.

STANDARD GRADING RULES

for

Southern Yellow Pine Lumber

SECTION I

GENERAL

1. Southern Pine lumber, which includes timbers, shall be manufactured, graded and measured by these rules, unless otherwise stipulated between buyer and seller. These rules conform to the size and other requirements of American Lumber Standards. Lumber graded under these rules may be designated as standard lumber.

2. The inspection and shipping provisions of these rules represent customary usage and fair trade practice, but freedom of contract between buyer and seller is recognized, and any of these provisions may be set aside by special agreement. When contracts specify grades according to designations herein provided and do not incorporate any exceptions, they shall be construed as being subject to all applicable provisions of these rules.

3. Standard definitions and classifications of the most common characteristics and causes for grade limitation for Southern Pine lumber are provided beginning on page 103, and include checks, decay, grain deviation, holes, knots, manufacturing imperfections, pitch, pitch pockets, pitch streaks, pith, shakes, splits, stain, wane, warp and compression wood.

SPECIES, DENSITY AND RATE OF GROWTH

4. The Southern Pines embrace several botanical species of which the predominant are long-

leaf, slash, shortleaf, and loblolly. Lumber cut from Southern Pine trees is classified as Southern Pine, or as Longleaf (when conforming to definition of Longleaf), and these are the only species distinctions recognized under these rules.

5. Medium-Grain lumber averages on either one end or the other not less than 4 annual rings per inch, measured over a 3" portion of a radial line from pith as in dense, or over such portion less than 3" as may be present, and which shall be representative of average growth on cross section.

6. Dense lumber averages on either one end or the other not less than 6 annual rings per inch and not less than $\frac{1}{3}$ summerwood, measured as described in paragraph 9 and on pages 58 to 60. Contrast in color between summerwood and springwood must be distinct. Pieces averaging less than 6 annual rings per inch and not less than 4 meet dense requirements if averaging $\frac{1}{2}$ or more summerwood.

7. Longleaf lumber is produced only from tree species of *Pinus elliottii* and *Pinus palustris*, and averages on either one end or the other not less than 6 annual rings per inch and not less than $\frac{1}{3}$ summerwood, measured as described in paragraph 9. Contrast in color between summerwood and springwood must be distinct, and summerwood must be dark in color except in pieces having considerably above minimum summerwood requirements.

8. Other rate-of-growth classifications are:
(a) Close-Grain lumber averages on either one end or the other not less than 6 annual rings per inch, measured over 3" portion of a radial line from pith as in dense, or over such portion less than 3" as may be present, and which shall be representative of average growth on cross section.
(b) Open-Grain lumber is not restricted as to rings per inch or rate of growth. (c) Wide-Ring lumber and Coarse-Grain lumber fail to meet medium-grain requirements.

9. Average annual rings per inch and percentage of summerwood required in Longleaf and Dense shall be determined by measurement over a portion of a radial line from pith that is representative of average growth on cross sec-

tion, but distance from pith as hereinafter specified for measurement shall not be changed. (a) In case of disagreement, two radial lines shall be chosen, in which case number of rings per inch and percentage of summerwood shall be average of the two lines. (b) The measurement in pieces containing pith and 5" radial line shall be over third, fourth, and fifth inches from pith along radial line. (c) The measurement in pieces containing pith but not a 5" radial line shall be over 3" farthest from pith, except in pieces less than 2" by 8" in section or less than 8" wide with not over 16 square inches of cross section which shall be measured on second inch from pith. (d) The measurement in pieces not containing pith shall be over 3" on an approximate radial line beginning at edge nearest pith in lumber over 3" thick, and on second inch nearest pith in lumber 3" or less in thickness. (See pages 58 to 60.)

USE CLASSIFICATIONS

10. **Structural lumber** is 2" or more in thickness and width, and is for use where working stresses are required. Such lumber also is designated as stress-graded lumber, which term includes lumber of any thickness or width graded and rated for its strength properties.

11. **Factory-and-shop lumber** is produced or selected primarily for industrial uses or remanufacturing purposes.

12. **Yard lumber** consists of grades, sizes and workings intended for ordinary construction and general building purposes, and is classified as select and common. (a) Select lumber is of good appearance and finishing qualities, having grade names of B&B, C, C&Btr and D. (b) Common lumber is suitable for general construction and utility purposes, and has grade names of No. 1, No. 2, No. 3 and No. 4.

SIZE CLASSIFICATIONS

13. **Boards** are less than 2" in nominal thickness and are 1" or more in width, and if under 6" wide are classified also as strips.

14. **Dimension** is from 2" to but not including 5" thick and is 2" or more in width, and is classified also as framing, joists, planks, rafters, studs, small timbers, etc.

15. **Timbers** are 5" or more in least dimension, and are classified also as beams, stringers, posts, caps, girders, purlins, sills, etc.

CLASSIFICATIONS AS TO MANUFACTURE

16. **Rough lumber** has not been dressed but has been sawed, edged and trimmed at least to extent of showing saw marks in the wood on the 4 longitudinal surfaces of each piece for entire length.

17. **Dressed lumber**, to attain smoothness of surface and uniformity of size, has been surfaced, planed or dressed by a planing machine on one side (S1S), two sides (S2S), one edge (S1E), two edges (S2E), or a combination of sides and edges (S1S1E, S1S2E, S2S1E or S4S).

18. **Worked lumber** in addition to being dressed has been matched, shiplapped or patterned.

(a) **Matched lumber** has been worked with a tongue on one edge of each piece and a groove on opposite edge to provide a T&G joint by fitting two pieces together. When end-matched the tongues and grooves are worked in ends also.

(b) **Shiplapped lumber** has been worked or rabbeted on both edges of each piece to provide a lapped joint by fitting two pieces together.

(c) **Patterned lumber** has been worked to a shaped or molded form or pattern in addition to being dressed, matched or shiplapped, or any combination of these workings.

19. **Blanked lumber** is dressed to a size in excess of standard dressed size but scant of nominal size, and may involve any dressing from S1S or S1E to S4S.

20. **Resawn lumber** is the product of sawing (resawing) any thickness of lumber to develop thinner lumber. **Ripped lumber** is the product of sawing (ripping) any width of lumber to develop narrower lumber.

SPECIAL QUALITY CLASSIFICATIONS

21. **Edge-Grain lumber** has an average of at least 6 annual rings per inch across its face at each point in length, with annual rings forming an angle of 45° or more with face. When the angle becomes less than 45° at any point, the lumber may be classed as flat-grain or near-rift, as case may be.

22. **Near-Rift lumber** either has fewer rings per inch than required in edge-grain but otherwise conforms to edge-grain provision, or has an average of at least 6 annual rings per inch across face at each point in length and has only one edge of grain on face but forms an angle of less than 45° with face side.

23. **Heartwood or sapwood**, or a combination of both, is permitted in grades described in these rules except as specifically required or restricted. (a) Heart-face lumber is free from sapwood on face side. (b) Heart or all heart lumber is free from sapwood throughout piece. (c) Requirements for a specified percentage of heartwood should indicate whether according to cubical content, facial area or girth measurement, and if not so indicated shall be construed as requiring cubical content measurement. (d) A specified percentage of heartwood according to cubical content measurement is the percentage of total volume of each piece required to be heartwood. (e) The facial area of a piece under 2" thick for determining percentage of heartwood is combined area of the two wide surfaces, and of 2" thick and over is combined area of the 4 longitudinal surfaces. Sapwood permitted under facial area measurement is not limited as to location on the facial area of piece. (f) Girth measurement for determining percentage of heartwood is made around girth of piece at point in length where sapwood occupies greatest amount of girth.

24. **Resawn provisions** herein established are for resawn lumber dressed prior to resawing and not afterward. (a) Specifications for S1S, S1S1E and S1S2E dressing that do not specify a resawn product shall be interpreted as requiring standard dressed lumber. (b) Uniformity of thickness does not characterize resawn lumber to degree

that it does standard dressed lumber, and variations not exceeding $1/32''$ over and under required average thickness shall be allowed in all resawn grades. (c) The product of resawing S2S, S2S1E and S4S stock shall be designated as Resawn S1S, Resawn S1S1E and Resawn S1S2E, respectively. (d) Specifications that indicate size to be resawn without indicating saw kerf allowance for resawing or required average thickness for resawn product shall be interpreted as requiring average thickness based on $1/8''$ saw kerf allowance. (e) Specifications for resawn lumber should be definite in indicating basis of grading although grade requirements usually apply to lumber to be resawn instead of to resawn product and this basis shall apply in all cases unless otherwise specified, but any grade requirements to be applied to the lumber after it is resawn may be specified if desired.

25. Clear or practically clear quality is not provided for herein as a regular or staple grade, but it can be ordered specially if desired, and such quality shall be designated as Clear. When specified, standard A manufacture is required, and other imperfections are limited to very small surface checks and very light warp. The reverse side shall be not lower than B&B. (B&B lengths apply.)

INSPECTION AND SHIPPING PROVISIONS

26. In terms of sale or otherwise, buyer and seller may agree on any basis desired for settlement of any complaint as to grade, size or tally. In absence of special agreement, the purchase, sale or shipment of lumber designated by grades described in these rules must be construed as involving agreement to abide by all applicable provisions of rules, including submission to inspection by Southern Pine Inspection Bureau of any lumber under complaint as to size, grade or tally.

27. Grade complaints may be made on lumber only when it is in the form in which it was shipped. Any change in manufacture or working, or through kiln drying, fabrication or use, relieves seller of responsibility of recognizing any grade complaint.

28. In case of complaint on grade, size, working or tally of any item or shipment, Bureau inspection service is available upon request and at a reasonable charge. This service is available also for nonstandard lumber if appropriate specifications are provided.

29. In case of complaint involving tally, entire shipment shall be held intact for retally. When complaint relates to grade, size or working and does not involve tally, buyer is required to accept portion of shipment which is of proper grade, size or working, as case may be, holding intact the portion thereof which is in dispute for Bureau inspection. Acceptance and use by buyer of a portion of shipment shall not be construed as his acceptance of entire shipment. Buyer shall pay in accordance with terms of sale for portion he accepts or for any portion not held intact for inspection, but his acceptance of a part of a shipment does not prejudice his just claim on any unused lumber alleged by him to be below grade or not of size or working ordered. Complainant buyer shall hold disputed lumber intact, properly protected, for not exceeding 30 days after date of request for inspection and shall file complaint with seller within 10 days from receipt of shipment. (For moisture content complaints, see paragraph 60.)

30. Shipments must conform to purchase specifications in respects other than grade, size, working and tally, but any complaint requiring adjustment in invoice must be filed with seller within 10 days from receipt of shipment, and seller shall have right to verify accuracy of any such complaint, including right to Bureau inspection if desired.

31. Upon receipt of complaint from buyer, seller should immediately request Southern Pine Inspection Bureau to provide inspection or tally service, as case may be, or should otherwise adjust complaint on a satisfactory basis with buyer. If seller desires to have lumber inspected, buyer shall lend all reasonable assistance to facilitate inspection or tally.

32. For purposes of determining compliance with purchase specifications and of effecting settlement of invoices between buyers and sellers,

each item of a shipment shall be considered as of grade invoiced if upon Bureau inspection 95% thereof or more is found to be of said grade or better. (a) When degradés are in excess of 5% of item, or when more than one grade lower than grade invoiced, such degradés shall be property of seller. (b) The expense of such inspection shall be borne by seller if an item is over 5% below grade or more than one grade lower than grade invoiced, and by buyer if 5% or less, but applicant for inspection shall be responsible to Bureau for cost thereof.

DESCRIPTION, MEASUREMENT AND TALLY

33. Dressed thicknesses and widths of lumber shown under item descriptions shall be standard for corresponding nominal sizes shown. Lumber of standard size, rough or dressed, shall be described by its nominal dimensions, and any grading provision predicated on thickness or width shall be construed as denoting nominal size unless otherwise provided.

34. Board measure is the standard basis of measuring lumber under these rules, and the board foot is the unit of measurement. A board foot is the quantity of lumber contained in or derived by drying, dressing or working from a piece of rough green lumber 1" thick, 12" wide and 1' long, or its equivalent in thicker, wider, narrower or longer lumber.

35. Lumber shall be tallied board measure with exception of mouldings which shall be tallied in linear feet. (a) Board measure of dry lumber, rough or dressed, is based on corresponding nominal dimensions of rough green lumber. (b) The number of board feet in a piece is obtained by multiplying nominal thickness in inches by nominal width in feet by length in feet, but if nominal thickness is less than 1", the number of board feet is product of nominal width in feet by length in feet. (c) Lumber of standard sizes shall be tallied and invoiced by number of pieces of each size and length in shipment and the invoice shall show a piece tally in board feet. (d) Lumber finished to special nonstandard size shall be tallied and invoiced as of standard rough

(nominal) size necessarily used in its manufacture, and the invoice in addition to showing a piece tally in board feet shall show actual thickness and width of such lumber.

36. The actual-width measurement of lumber with a board rule normally is not used for Southern Pine, but if specified, pieces measuring to even $\frac{1}{2}$ -foot are counted alternately as of next higher and lower foot count; fractions below $\frac{1}{2}$ -foot are dropped, and those above counted as next higher foot.

37. Average length of any lot of lumber is computed by dividing total length in feet by total number of pieces in lot. Average width of any lot of 1" or less in thickness is computed by dividing total board feet by total length in feet and multiplying result by 12, but if thicker than 1" the total board foot tally is divided first by thickness as expressed in inches and fractions of an inch.

ROUGH AND DRESSED SIZES

38. These thickness and width standards include requirements for dressing S1S and S1E to S4S, as well as for rough lumber, but further details for dressed and worked sizes are provided with various item descriptions. Also, particular rules in relation to these size standards are provided in sections beginning with paragraphs 63, 68 and 73.

39. Minimum rough thickness (dry) of lumber of 1" nominal thickness is $29/32"$, except 20% of a shipment may be $1/32"$ thinner or not less than $7/8"$.

40. Minimum rough thickness (dry) of lumber $1\frac{1}{4}"$ to 2" nominal thicknesses is $1/8"$ thicker than corresponding dressed thickness, except 20% of a shipment may be not less than $3/32"$ thicker.

41. Minimum rough widths (dry) are $\frac{1}{4}"$ less than nominal for widths under 8", and $3/8"$ less for 8" and wider. (NOTE: Widths of finish exceed ALS minimums.)

42. Minimum rough thicknesses and widths (green or dry) for lumber over 2" thick are $\frac{1}{4}"$ scant of nominal for faces under 8", and $3/8"$ scant for 8" and up.

43. **Standard dressed thickness** (dry) of 1" board, S1S and S2S to S4S, is $25/32$ ". (For exceptions see paragraph 157.)

44. **Standard dressed thickness** (dry) of 2" dimension, S1S and S2S to S4S is $1-5/8$ ".

45. **Standard dressed widths** (dry) of lumber 2" thick and less, S1E and S2E to S4S, are $3/8$ " less than nominal for widths under 8" and $1/2$ " less for 8" and wider. (NOTE: Widths of finish exceed ALS minimums.)

46. **Standard dressed thicknesses and widths** (green or dry) of lumber over 2" thick, S1E and S1S to S4S, are $3/8$ " scant of nominal for faces under 8", and $1/2$ " scant for 8" and over.

GENERAL LENGTH PROVISIONS

47. **Trimming** for removal of spur ends and projecting splinters, and to a length not scant of nominal length, is required of all standard lumber under these rules, except end-matched lumber and lath are governed by separate rules. Lumber over 2" thick is allowed overlength tolerance just short of 12", but lumber 2" thick and less shall be double-end trimmed to a length not over 3" in excess of nominal length. (Exception: 2" dimension over 12" wide or over 20' long may be overlength just short of 12".)

48. **Trimming** for all thicknesses of standard lumber requires reasonably square ends. In 2" and thinner lumber, out-of-square tolerance is limited to $1/32$ " for each inch of thickness or width, except occasional mechanical skips limited to $1/16$ " are allowed. In lumber over 2" thick and in 2" dimensions over 12" wide or over 20' long, out-of-square tolerance is limited to $1/16$ " for each inch of thickness or width. Requirements for trimming to exact or equalized lengths should be specified if desired.

49. **Standard lengths** shall be 1-foot and longer in multiples of 1-foot for purposes of grading and measuring, but for most other purposes, such as specifying for purchase and sale, standard lengths shall be same as standard stock lengths.

50. **Standard stock lengths** shall be within range of 4' to 20', inclusive in multiples of 2-feet for 10' and longer, and in multiples of 1-foot if under 10'.

51. In specifications for assorted lengths, random lengths, standard lengths, standard stock lengths, and for lengths unspecified or indefinite as to range or assortment, standard practice shall be to furnish a fair assortment of standard stock lengths of 10' to 16', 18' or 20', except percentages of total quantities in lengths under 10' shall be permitted as follows:

GRADES	4' and/or 5'	6' and/or 7'	8' and/or 9'
B and B	0%	0%	5%
C & C & Btr	0%	5%	7%
D	3%	6%	8%
No. 1	0%	5%	7%
No. 2	3%	6%	8%
No. 3	5%	8%	10%
No. 4	8%	10%	12%

¹Any unfilled portion of 6' and/or 7' may be filled in 8' and/or 9'.

²Any unfilled portion of 4' and/or 5' may be filled in 6' and/or 7'.

³Any unfilled portion of 4' to 7' may be filled in 8' and/or 9'.

52. When the shortest length or lengths under paragraph 51 are excluded by a specification and no percentage change is specified, the total allowable percentage under paragraph 51 may be shipped in the lengths under 10' that are allowed. When a lineal average is specified, the percentage limits shall not apply.

53. Lengths other than standard stock lengths usually are not available from stock and must be specified if desired. If a particular length, length range, assortment or combination of lengths is specified, lengths other than those specified shall not be included. Special fractional lengths, if specified, shall be counted as next higher standard stock length, or as next higher even length if in excess of 20'.

54. Marketing practice shall permit buyer to specify a particular length, length range, assortment or combination of lengths desired.

MOISTURE CONTENT PROVISIONS

55. Dryness or seasoning as expressed in terms of maximum moisture content allowed at any point on the surface of each piece and as specified under paragraphs 57 and 58 is a standard grade requirement under these rules for lumber

of 2" thickness and less except as otherwise specified. Moisture content limits for other sizes or on a different basis should be specified if desired. Restrictions on moisture content shall apply at time of dressing lumber to standard size, as well as at time of delivery to buyer. Moisture content rules for kiln-dried lumber require adequate cooling after removal from kilns before dressing and the final moisture content testing.

56. **Moisture content for D and better grades** of 1" and 1- $\frac{1}{4}$ " nominal thicknesses shall not exceed 15%, but if specified, represented or grade marked as kiln dried, maximum shall be 12% on 90% of pieces and 15% on remainder. (See exception for paneling, paragraph 136.) For 1- $\frac{1}{2}$ ", 1- $\frac{3}{4}$ " and 2" in such grades, maximum shall be 18%, but kiln dried limit shall be 15%. For thicknesses over 2" in such grades, maximum shall be 20%, but kiln-dried limit shall be 18%.

57. **Moisture content for No. 1, No. 2 and No. 3 grades** of 2" nominal thickness and less shall not exceed 19%, but if specified, represented or grade marked as kiln dried, the limit shall be 15%. (Exception: paneling, paragraph 136.)

58. **Moisture content limits** when kiln-dried or air-dried lumber is specified without stating the maximum percentage of moisture content allowed and which is not subject to the moisture provisions of standard grades shall be construed as permitting the moisture content of 2" nominal thickness and less to be not over 15% if ordered kiln dried and not over 19% if ordered air dried, and if in excess of 2" nominal thickness the limit shall be 20% if ordered kiln dried and 23% if ordered air dried.

59. In case of complaint on account of dryness of any item or shipment of Southern Pine lumber, Bureau inspection service shall be available upon request. Such inspections for dryness shall be made in accordance with maximums allowable under these rules or inspection service shall be rendered for special moisture content limitations if detailed specifications are provided.

60. If a complaint is made on moisture content, buyer shall notify shipper within 24 hours after lumber is unloaded. All lumber on which complaint is made as to moisture content must

be fully protected from conditions which would tend to increase its moisture content. If there is evidence upon arrival of inspector that these provisions have not been strictly observed, seller shall be relieved of responsibility for any excess moisture found in the lumber.

61. If it should be found as a result of Bureau inspection that all or any portion of a shipment exceeds maximum moisture content allowable, such portion shall be considered as not complying with applicable grade provisions.

62. Lumber dressed at a moisture content within limits of these rules is sufficiently stabilized for most uses, but limited size changes will occur from shrinkage or expansion if moisture content is further reduced or increased after dressing. The normal shrinkage allowance is 1% reduction in size for each 3-point reduction in percentage of moisture content and same tolerance for any expansion.

ROUGH AND BLANKED LUMBER

63. Rough lumber and blanked lumber shall be graded the same as herein provided for standard dressed lumber of like kind and grade, and in addition such other imperfections as can be removed in dressing to standard size shall be allowed, except wane in 2" thickness and over shall be limited by paragraph 65.

64. Wane is allowed in rough lumber under 2" thick and in blanked lumber under 4" thick according to what can be removed in dressing to standard size by dressing each piece most advantageously, except each rough piece must show saw marks on all four surfaces for full length. Such lumber usually is intended for remanufacture. Any different grading if desired should be specified.

65. Wane is allowed in rough lumber 2" thick and over, and in blanked lumber 4" thick and over on basis that requires same amount of each surface to be free of wane as in corresponding dressed size of like kind and grade. Such lumber usually is not remanufactured. If different grading is desired, it should be specified.

66. **Oversize** in the thickness of rough lumber shall be limited to $1/2"$ if $2"$ thick or less, and to $1"$ if over $2"$ thick.

67. **Rough lumber**, when sold as such, may be surfaced for removal of any excess over nominal dimensions unless otherwise specified, and when so surfaced shall be considered rough lumber; such lumber may not be surfaced scant of nominal dimensions, although minimum rough sizes are allowed in pieces or areas that fail to surface.

GENERAL WORKED-LUMBER PROVISIONS

68. **The standard tongue** is $1/4"$ wide in T&G lumber of nominal thicknesses of $3/4"$, $1"$, $1-1/4"$ and $1-1/2"$, and $3/16"$ wide in nominal thicknesses of $3/8"$, $1/2"$ and $5/8"$. (See cuts, pages 118-142.)

69. **The tongue** in flooring, ceiling, drop siding, S2S&CM and other T&G patterns having $1/4"$ or longer tongue may be scant in occasional pieces of any grade, but not over $1/16"$ scant in C and better, not over $1/8"$ scant in D and No. 1, not over $3/16"$ scant in No. 2, and not over $7/32"$ scant in No. 3.

70. **The standard lap** is $1/2"$ wide in shiplapped drop siding of nominal widths of $8"$ and over, and $3/8"$ wide in other shiplapped lumber, including shiplapped drop siding of nominal widths under $8"$, except the lap is $1/8"$ wide in shiplapped ceiling as per cut on page 128. (See other cuts on pages 131 to 141.)

71. **The lap** in ordinary shiplap (S2S&SL) may be not over $1/16"$ scant in C and better, not over $1/8"$ scant in D and No. 1, not over $1/4"$ scant in No. 2, and not over $5/16"$ scant in No. 3; and in shiplapped drop siding and other shiplapped patterns having $3/8"$ or more lap, exposed lap shall not be scant in C and better and covered lap may be not over $1/32"$ scant, but both combined may be not over $1/16"$ scant in D and No. 1, and not over $1/8"$ scant in No. 2. These tolerances are permitted in occasional pieces only.

72. **Wane** on reverse side of flooring, ceiling, drop siding and paneling permitted as follows: (a) In C and better, equivalent to $1/3$ width by $1/6$ length if not extending into tongue and groove, but beginning at point at least $10"$ from

end, wane may extend into groove or into $1/2$ thickness of tongue for not longer than 10" provided width and length of wane reduced proportionately; (b) In D, wane may extend full length but not across full width, and beginning 6" from end may extend into groove or into $2/3$ thickness of tongue for not over 18"; pieces otherwise C are allowed in D if having reverse-side wane as in No. 2; (c) In No. 2, may destroy tongue and lower lip of groove for not over 16" provided does not extend across full width, and short wane dip permitted provided does not enter either tongue or groove, but such wane in both cases shall be limited to 8" long in first 16" at end, and may not extend into wood above tongue or into top lip of groove.

GENERAL GRADING PROVISIONS

73. All grades are established on a basis of suitability for general use intended under these rules, and except as otherwise specifically indicated, grade requirements shall be applied to each item according to its size and length when graded and without consideration to further manufacture. (a) When nonstandard grades of lumber are specified, the quality should be described clearly, and grading shall be on the special basis specified. (b) When a nonstandard size is specified or when a particular provision of a standard grade is waived but standard grade name is used, all other provisions of the grade shall apply.

74. The grading of lumber cannot be considered an exact science because it is based on a visual inspection of each piece and on judgment of grader, but these rules are sufficiently explicit to establish 5% below grade as a reasonable variation in judgment between inspectors and graders. While definite and complete descriptions of lumber quality usually are given, it is not feasible and practicable to be fully explicit in all respects and the common sense judgment of grader or inspector shall be used for any indefinite provisions, but provisions that are clear and definite shall not be exceeded.

75. If characteristics other than those described herein occur, they shall be appraised in relation to characteristics permitted or limitations

prescribed for the grade and allowed if equivalent or less damaging in effect on strength, appearance or other utility value of piece. (a) Manufacturing imperfections other than those described herein shall be restricted according to their seriousness in effect on utility and serviceability of the lumber in relation to allowable imperfections. (b) If lumber of a higher grade than specified is supplied, it shall be accepted as of grade specified, provided as good or better in every respect. (c) Occasional-occurrence provisions shall be construed as limiting the number at rate of one in twenty or to 5% for any lot.

76. Grade descriptions based upon the poorest pieces allowed in each grade are desirable in interest of keeping rules simple and facilitating work of grader. As a result, average quality in any grade is far better than minimum described. Imperfections of maximum size ordinarily will not be found in many pieces, and some barely will miss being next higher grade. Also, pieces often have only one grade-controlling imperfection. Others may contain two, but seldom do three or more occur in one piece. While these rules prescribe number, extent and limitations of characteristics permitted in poorest pieces admissible in each grade, a grade should be representative of the full range of quality the mill's timber yields and not made up of only the lowline pieces produced in such grade.

77. All grades limit the quality of each piece as a whole but the method varies according to the item. (a) The poorest face determines grade of common dimension, common timbers and structural lumber whether rough, dressed or worked. (b) Patterned faces and upper or wearing faces determine grade and are grading faces in patterned and standard-matched lumber, and reverse side admits imperfections that will not detract from utility and serviceability for uses intended under these rules, except Par. 72 governs reverse-side wane. (c) The best faces determine grade in rough and blanked finish and common boards, and in items dressed or worked to provide optional grading faces, such as S2S, S2S1E, S4S, S2S&CM, S2S&SL and similar workings, but except as otherwise provided lumber dressed S1S, S1S1E

or S1S2E to standard or below-standard thickness is graded on dressed faces. The reverse side may be one grade lower unless otherwise provided, except scantness in thickness from skipped dressing shall be limited to amount allowed in face side manufacture. (d) For finish and industrial lumber 2" thick and over, if rough, blanked or S4S, requirements for face and reverse side shall each apply to one-half adjoining narrow faces.

78. The grading provisions of these rules unless otherwise indicated are based on S4S lumber and appropriate allowances shall be made for any different dressing or working. (a) The rules for S4S dressing do not necessarily require clean dressing in all cases, but permit skip dressing and scantness as specified, which generally is consistent with quality in other respects. (b) Skip dressing and scantness are permitted in some grades, but such tolerances are limited to dressed lumber, and shall not be used to permit reductions below specified minimum rough sizes.

79. Stain provisions of standard grades apply regardless of method of drying, unless otherwise specified, but lumber stained in excess of grade provisions may be classified as of its actual grade in other respects provided it is represented and designated as "stained" lumber.

80. Medium stain is allowed in lumber over 2" thick if specified to be dry, but stain restrictions for lumber allowed to be unseasoned or partly seasoned should be specified if desired.

81. Orders specifying "S1S Edges Rough" and "S2S Edges Rough" shall be interpreted as not allowing removal of excess width by dressing one edge to nominal widths, but otherwise orders for S1S and S2S lumber may be dressed one edge to full nominal width per paragraph 67 and any pieces failing to dress on edges meet requirements of S1S and S2S lumber if not scant of minimum widths per paragraph 41.

82. Bundling is allowed although not required unless specified, but when lumber is bundled, each length shall be bundled separately.

83. When special grades or patterns are specified, it is customary to permit inclusion of lower grades developed in manufacture up to 20% of

total quantity shipped, but purchase order must include authorization for this and should indicate price differential if any is to apply.

84. The B&B and C grades may be combined into a single grade of C&Better, but combination grades other than C&Btr are not standard for Southern Pine. When nonstandard combinations are sold with base grade to be in accordance with these rules and are required to be grade marked, each piece shall be grade marked according to its standard grade.

85. Heartwood, sapwood, density, species, rate-of-growth and grain classifications defined herein are additional optional quality standards that can be coupled with regular standard grades to constitute additional special standard grades, and lumber of any such special standard grade shall conform to requirements for the additional quality and regular grade as specified.

86. Knots in stress-graded lumber are limited on narrow faces, at edges of wide faces, along center lines of wide faces and in cross section by requirements for particular items. (a) Any sizes permitted at edges of wide faces may increase proportionately to sizes permitted along center, except if largest dimension is less than 4" all knots in entire cross section are restricted throughout as specified for edges of wide faces. (b) If knots are to be limited according to portion of cross section occupied in piece, the knot displacement shall be in relation to actual size of piece at time of grading, and the full damaging effect of knot on strength in cross section shall be considered. (c) Sizes specified for any location in cross section of piece shall be restricted the same throughout length. (d) Restrictions are based on maximums for single knots, but two or more knots located in same or approximately same cross section are measured and appraised in relation to maximum single knots permitted, and are allowed if equivalent or less damaging in effect on strength of piece. (e) The sum of sizes of all knots in any 6" of length may not exceed twice the size of largest knot allowed, but two knots of maximum permissible size are not allowed in same 6" of length on any face, and sum of sizes of all knots within middle half of

length of any face shall not exceed four times size of largest knot allowed. (f) Cluster knots are prohibited.

87. Slope of grain in stress-graded lumber is measured and limited throughout four lengthwise surfaces of each piece and at point of greatest slope. (a) In pieces as much as 2" thick and 4" wide, the measurement is over distance sufficient to define general slope, usually 2' or 3', disregarding short local deviations such as caused by knots. This measurement applies also to wide faces of pieces under 2" thick if 4" or over in width. In addition, it applies to pieces less than 4" wide and to narrow faces of pieces less than 2" thick if local deviation occurs in conjunction with a knot allowed in the grade. (b) If a local deviation occurs in a piece less than 4" wide or on narrow face of a piece less than 2" thick, and is not associated with a permissible knot in piece, measurement of slope shall include local deviation limited to distance that encompasses it. The amount of slope in such cases shall be average through piece from surface to surface, provided all straight-grain surfaces are computed as 1 in 20 in the average. (If uniformly graduated or balanced slope occurs through piece, average of opposite surfaces can be taken as average through piece, but otherwise any unevenness shall be considered in computing average.)

INSPECTION CERTIFICATE

An SPIB Certificate of Inspection (see pages 2 and 3) shows:

1. Name of firm for whose account inspection made.
2. Place of inspection.
3. Destination of shipment.
4. Car number or other identification of carrier.
5. Description of lumber as to size, length, grade and tally.
6. Mark placed on each piece identifying SPIB inspector.
7. Certification and signature of inspector.

Order Number	CERTIFICATE OF INSPECTION			
	SOUTHERN PINE INSPECTION BUREAU of the SOUTHERN PINE ASSOCIATION			
	NEW ORLEANS, LA.			
Point of Inspection			Date	
Inspected for the account of				
At the plant of				
For shipment to				
In Car No.				
This is to certify that I, _____, an official inspector of the Southern Pine Inspection Bureau have personally examined and inspected each piece of lumber entered by this Certificate of Inspection, and that the lumber conforms to the specifications as set forth below, being in good order and condition at the time of inspection.				
SIZES	L E N G T H S	Feet	LINEAR	FEET
Inspector				

Section II

Finish, Flooring and Drop Siding Mouldings, Paneling, Ceiling, Partition OG Batts and Bevel Siding Boards and Miscellaneous

FINISH

(The attractive and varied grain of Southern Pine, as well as its color and other physical characteristics, cause it to be ideally suited for the many uses where a high quality is required. It is particularly adaptable for natural finishes or stains. Generations of satisfied users vouch for the lasting charm and beauty of this versatile wood.)

101. Grades: B&B, C, C&Btr, and D. (a) Lengths per paragraph 51. (b) Moisture content per paragraph 56.

102. Standard sizes for finish are:

THICKNESS ¹ (Inches)		WIDTH (Inches)	
Nominal ²	Dressed	Nominal	Dressed ³
$\frac{3}{8}$	$\frac{5}{16}$	2	$1\frac{5}{8}$
$\frac{1}{2}$	$\frac{7}{16}$	3	$2\frac{5}{8}$
$\frac{5}{8}$	$\frac{9}{16}$	4	$3\frac{5}{8}$
$\frac{3}{4}$	$1\frac{1}{16}$	5	$4\frac{5}{8}$
1	$1\frac{1}{8}$	6	$5\frac{5}{8}$
$1\frac{1}{4}$	$1\frac{1}{8}$	7	$6\frac{5}{8}$
$1\frac{1}{2}$	$1\frac{5}{8}$	8	$7\frac{1}{2}$
$1\frac{3}{4}$	$1\frac{7}{8}$	9	$8\frac{1}{2}$
2	$1\frac{5}{8}$	10	$9\frac{1}{2}$
$2\frac{1}{2}$	$2\frac{1}{8}$	11	$10\frac{1}{2}$
3	$2\frac{5}{8}$	12	$11\frac{1}{2}$
$3\frac{1}{2}$	$3\frac{1}{8}$	over 12	off $\frac{1}{2}$
4	$3\frac{5}{8}$		

¹These thicknesses apply to all widths.

²Board measure for $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ " and $\frac{3}{4}$ " computed by nominal surface dimensions. (See par. 35.)

³These widths exceed ALS minimums.

103. B&B FINISH

A supreme quality, generally clear, and admits:
Checks—small surface checks (not over $1/32''$ wide and not over 4" long)

Compression wood—prohibited if in readily identifiable and damaging form

Firm red heart—on not over 5% of face

Knots—one sound-intergrown pin knot ($1\frac{1}{2}''$ or less) in any 4' of length in 4' to 20' or one in each piece if under 4' long

Manufacture—standard B manufacture (§416)

Pitch—one very small closed pitch pocket and one small pitch streak in any 4' of length in 4' to 20' or one in each piece if under 4' long; diffused general pitch not permitted

Splits—very short (not longer than $\frac{1}{2}$ width of piece)

Stain—light stain on not over 15% of face

Warp—light warp if under 2" thick; very light warp if 2" and over (§444)

(Reverse side not lower than D, except decayed knots are not allowed.)

104. "C" FINISH

A choice quality, reasonably clear, and admits:
Checks—medium surface checks (not over $1/32''$ wide but over 4" long and not over 10" long); through checks not over $1/32''$ wide are allowed if not longer than width of piece

Compression wood—prohibited if in readily identifiable and damaging form

Firm red heart—on not over 25% of face, except not limited if otherwise as good as B&B

Holes—average of not over 6 pin holes ($1/16''$ or less) per surface foot

Knots—sound or firm and tight, limited to small size (not over $\frac{3}{4}''$), except one medium (over $\frac{3}{4}''$ and not over $1\frac{1}{2}''$) allowed also in 5" and 6" widths, and two medium in widths over 6", but sum of diameters of all knots in any 4' of length must not exceed twice diameter of maximum single knot allowed

Manufacture—standard C manufacture (§417)

Pitch—light pitch only, except medium allowed if otherwise B&B; small closed pitch pockets,

except one medium allowed also in 5" and 6" widths, and two medium in widths over 6"; medium pitch streaks

Pith—small ($\frac{3}{4}$ square inch or less)

Shakes—slight (not over $\frac{1}{32}$ " wide) if not through and not longer than width of piece

Splits—short (not longer than width of piece)

Stain—light; medium on not over 15% of face of any piece

Wane—not to exceed $\frac{1}{8}$ " deep or $\frac{1}{2}$ " wide

Warp—medium if under 2" thick; very light if 2" and over (§444)

(Reverse side not lower than No. 1 boards, except decayed small knots permitted.)

105. C&BTR FINISH

A combination quality consisting of B&B and C grades of finish.

106. "D" FINISH

A good quality, although less restricted than higher grades, and admits:

Checks—large surface checks (not over $\frac{1}{16}$ " wide and not over 20" long); medium through checks (not over $\frac{1}{32}$ " wide and not over 10" long); large through checks if otherwise
C

Compression wood—not restricted

Firm red heart—on entire face

Holes—an average of not over 12 pin holes ($\frac{1}{16}$ " or less) per surface foot

Knots—decayed small knots (not over $\frac{3}{4}$ ") permitted if their surface is smooth and even with the surrounding surface; sound, firm, encased and pith knots limited to small size in 2", 3" and 4" widths, medium (not over $1\frac{1}{2}$ ") in 5" and 6" widths, and 2" in 8", 10" and 12" widths; all knots must be tight; sum of diameters of all knots in any 4' of length must not exceed twice diameter of maximum single knot allowed

Manufacture—standard D manufacture (§418) except scant width from skip not over $\frac{1}{32}$ " for each inch of nominal width allowed if otherwise as good as C

Pitch, pitch pockets, pitch streaks—medium pitch, medium closed pitch pockets and medium pitch streaks; if otherwise as good as C, large pitch streaks or equivalent in heavy pitch, and one large closed pitch pocket in 5" and 6" widths or two in widths over 6", allowed; medium through pitch pockets allowed also if otherwise as good as C

Pith—not longer than $\frac{1}{6}$ length of piece

Shakes—slight (not over $\frac{1}{32}$ " wide) if not through

Splits—medium (not over $\frac{1}{6}$ length of piece)

Stain—light; medium on not over 25% of face of any piece

Wane—not to exceed either $\frac{1}{4}$ " deep or $\frac{1}{8}$ width or $\frac{1}{3}$ length

Warp—heavy warp if under 2" thick; light warp if 2" and over (§444)

(Reverse side not lower than No. 2 boards, except reverse-side wane limited to $\frac{1}{2}$ " deep.)

FLOORING

(Southern Pine always has been supreme in the softwood flooring field. It not only is more resistant to heel and furniture marks, but possesses a warmth and richness of color all of its own. The B&B grade generally is regarded as the highest quality needed for fine floors. The C grade and the D grade as well afford an excellent floor. No. 2 Flooring likewise is very serviceable.)

107. The grades of flooring are B&B, C, C&Btr, D and No. 2. (a) Flooring may be worked plain-end or end-matched but if end-matched flooring is not specified, plain-end shall be required and lengths per paragraph 51. (b) Moisture-content per paragraphs 56 and 57.

108. Flooring may be classified as edge (vertical or rift) grain, near-rift, or flat (slash) grain; orders which do not provide otherwise are construed as allowing flat-grain or mixed grain. Edge-grain and near-rift flooring are graded same as flat-grain, except for the additional grain requirement.

109. Standard sizes for flooring are:

THICKNESS ¹ (Inches)		WIDTH (Inches)		
Nominal ²	Worked	Nominal	Face	Over-all ³
$\frac{3}{8}$	$\frac{5}{16}$	2	$1\frac{1}{2}$	$1\frac{3}{4}$
$\frac{1}{2}$	$\frac{7}{16}$	3	$2\frac{3}{8}$	$2\frac{5}{8}$
$\frac{5}{8}$	$\frac{9}{16}$	4	$3\frac{1}{4}$	$3\frac{1}{2}$
1	$\frac{25}{32}$	5	$4\frac{1}{4}$	$4\frac{1}{2}$
$1\frac{1}{4}$	$1\frac{1}{16}$	6	$5\frac{1}{16}$	$5\frac{7}{16}$
$1\frac{1}{2}$	$1\frac{5}{16}$			

¹These thicknesses apply to all widths.

²Board measure for $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{5}{8}$ " computed by nominal surface dimensions. (See par. 35.)

³The over-all widths for $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{5}{8}$ " thicknesses are $1/16$ " less. (See par. 68.)

110. Standard working of flooring, 1", 1-1/4" and 1-1/2" thick shall be S2S&SM and scratched or hollowed back; tongue and groove $7/32$ " from bottom of piece; groove $9/32$ " wide and $10/32$ " deep, with lower lip recessed $1/32$ " inside of a line perpendicular to face, reverse side thus being $1/32$ " narrower than face side; tongue $8/32$ " long, tapering from $9/32$ " thick at body of piece to $2/32$ " less near end of tongue. (See cut on page 127.)

FLOORING (PLAIN-END)

111. B&B FLOORING

A supreme quality, generally clear, and admits: Checks—small surface checks (not over $1/32$ " wide and not over 4" long)

Compression wood—prohibited if in readily identifiable and damaging form

Firm red heart—on not over 5% of face

Knots—one sound-intergrown pin knot ($1/2$ " or less) in any 4' of length in 4' to 20' or one in each piece if under 4' long

Manufacture—standard B manufacture (§416)

Pitch—one very small closed pitch pocket and one small pitch streak in any 4' of length in 4' to 20', or one in each piece if under 4' long; diffused general pitch not permitted

Splits—very short (not longer than $1/2$ width of piece)

Stain—light on not over 15% of face

Warp—light (§444)

112. "C" FLOORING

A choice quality, reasonably clear, and admits:
Checks—medium surface checks (not over $1/32''$ wide but over $4''$ long and not over $10''$ long)

Compression wood—prohibited if in readily identifiable and damaging form

Firm red heart—on entire face

Holes—average of not over six pin holes ($1/16''$ or less) per surface foot

Knots—sound and tight, limited to $1''$ size in $2''$ width, $1-1/4''$ in $3''$ and $4''$ widths, and $1-1/2''$ in $5''$ and $6''$ widths, but sum of diameters of all knots in any $4'$ of length must not exceed twice diameter of maximum single knot allowed

Manufacture—standard C manufacture (§417)

Pitch—light not limited; medium on not over 25% of face area

Pitch pockets—medium closed

Pitch streaks—medium

Pith—small

Shakes—slight if not through and not longer than width of piece

Splits—short (not longer than width of piece)

Stain—light; medium on not over 5% of face

Wane—not exceeding either $1/16''$ deep or $1-1/2$ square inches on surface

Warp—medium (§444)

113. C&BTR FLOORING

A combination quality consisting of B&B and C grades of flooring.

114. "D" FLOORING

A good quality, although less restricted than higher grades, and admits:

Checks—large surface checks (not over $1/16''$ wide and not over $20''$ long); medium through checks (not over $1/32''$ wide and not over $10''$ long); large through checks if otherwise C

Compression wood—not restricted

Firm red heart—on entire face

Holes—an average of not over 12 pin holes ($1/16''$ or less) per surface foot

Knots—decayed small knots (not over $3/4''$) permitted if their surface is smooth and even with the surrounding surface; sound, firm, encased and pith knots limited to $1-1/4''$ size in $2''$ width, $1-1/2''$ in $3''$, $4''$ and $5''$ widths, and $1-3/4''$ in $6''$ width; all knots must be tight; sum of diameters of all knots in any $4'$ of length must not exceed twice diameter of maximum single knot allowed

Manufacture—standard D manufacture (§418)

Pitch, pitch pockets, pitch streaks—medium pitch, medium pitch pockets, and medium pitch streaks; pitch streaks not larger than 15% of face or the equivalent in heavy pitch, one large pitch pocket per piece and medium through pitch pockets allowed

Pith—not longer than $1/6$ length of piece

Shakes—slight (not over $1/32''$ wide) if not through

Splits—medium (not over $1/6$ length of piece)

Stain—light; medium limited to 25% of face

Wane—not to exceed either $1/8''$ deep or $1/2''$ wide; if otherwise C, wane not to exceed either $1/4''$ deep or $3/4''$ wide allowed

Warp—medium (§444)

115. No. 1 Flooring is not provided under these rules as a separate grade, but if specified shall be designated and graded as D Flooring.

116. NO. 2 FLOORING

This grade requires each piece to be as good as No. 2 boards, but excludes some pieces as good as No. 2 boards under additional requirements as follows: Pieces containing No. 2 board imperfections, such as holes, noticeably defective knots, streaks of decay and excess wane, which might prevent the use of the piece as a whole for low-cost flooring shall not be admitted if causing over 10% waste in any piece. The waste allowed shall be confined to one cutting area in $12'$ and shorter, and to two cutting areas in $14'$ and longer, but the usable portions after allowance for cutting must be at least $24''$ long. Wane in the usable portions shall not be over $1''$ wide and not over $1/4''$ deep. (All pieces of No. 2 EM Flooring must be suit-

able for use without waste as low-cost flooring.)

117. **No. 3 Flooring** is designated as flooring not because of suitability for flooring use but only because of working, and admits all pieces below No. 2 Flooring if suitable for low-cost sheathing or lathing without wasting over 1/4 length of any piece. (All pieces of No. 3 EM Flooring must be suitable for low-cost sheathing or lathing without waste.)

FLOORING—END-MATCHED (EM)

118. **End-matched flooring** shall be graded by plain-end flooring rules and subject to other flooring provisions where applicable, but lengths and bundling shall conform to paragraph 119.

119. **Standard lengths** of end-matched flooring shall be 1' to 8' or longer, but if lengths are not specifically restricted, 15" shall be minimum actual length in B&B, C and C&Btr, and 12" in D, No. 2 and No. 3. (a) EM flooring shall be bundled in one or two tiers of six courses each, and bundles shall be in nominal lengths of 4' to 8' or longer in multiples of 1'. Actual face lengths of 3'6" and less shall be bundled by nesting two or more pieces in inside courses; lengths above 3'6" may be in straight bundles of each nominal length or in nested bundles. Each course of a bundle, whether made up of a single piece or two or more pieces, shall be within 6" of nominal length of bundle. (b) The nominal or count length of bundles shall be determined by averaging to nearest foot (Example: the 7' nominal or count length is above actual length of 6'6" up to and including 7'6"), except total tally of an item based on actual face lengths shall not be short of bundle tally.

DROP SIDING

(Because of its popularity, Southern Pine siding is readily available in most markets east of the Rockies. Southern Pine siding under these rules is required to be seasoned to a specific moisture content. Therefore, it is properly conditioned for painting. When siding is adequately seasoned, it will stay put and is not likely to shrink or open at the joints.)

124. End-matched drop siding shall be graded by plain-end drop siding rules and subject to other drop siding provisions where applicable, but lengths and bundling shall conform to paragraph 119. Standard end-matched tongue and groove is a tongue 5/32" thick by 7/32" wide and a groove 11/64" wide by 1/4" deep, and both located 1/8" from bottom of piece.

125. B&B DROP SIDING

A supreme quality, generally clear, and admits: Checks—small surface checks (not over 1/32" wide and not over 4" long)
Compression wood—prohibited if in readily identifiable and damaging form
Firm red heart—on not over 5% of face
Knots—one sound-intergrown pin knot (1/2" or less) in any 4' length in 4' to 20', or one in each piece if under 4' long
Manufacture—standard B manufacture (§416) Pitch—one very small closed pitch pocket and one small pitch streak in any 4' of length in 4' to 20', or one in each piece if under 4' long; diffused general pitch not permitted
Stain—light; medium on not over 5% of face
Warp—light (§444)

126. "C" DROP SIDING

A choice quality, reasonably clear, and admits: Checks—medium surface checks (not over 1/32" wide but over 4" long and not over 10" long)
Compression wood—prohibited if in readily identifiable and damaging form
Firm red heart—on entire face
Holes—average of not over six pin holes (1/16" or less) per surface foot
Knots—sound or firm and tight, limited to small size (not over 3/4"), except one medium (over 3/4" and not over 1-1/2") allowed also in 5" and 6" widths, and two medium in widths over 6", but sum of diameters of all knots in any 4' of length must not exceed twice diameter of maximum single knot allowed
Manufacture—standard C manufacture (§417) Pitch—light pitch only; small closed pitch pockets

124. **End-matched drop siding** shall be graded by plain-end drop siding rules and subject to other drop siding provisions where applicable, but lengths and bundling shall conform to paragraph 119. Standard end-matched tongue and groove is a tongue $5/32''$ thick by $7/32''$ wide and a groove $11/64''$ wide by $1/4''$ deep, and both located $1/8''$ from bottom of piece.

125. **B&B DROP SIDING**

A supreme quality, generally clear, and admits:
Checks—small surface checks (not over $1/32''$ wide and not over 4" long)

Compression wood—prohibited if in readily identifiable and damaging form

Firm red heart—on not over 5% of face

Knots—one sound-intergrown pin knot ($1/2''$ or less) in any 4' length in 4' to 20', or one in each piece if under 4' long

Manufacture—standard B manufacture (§416)

Pitch—one very small closed pitch pocket and one small pitch streak in any 4' of length in 4' to 20', or one in each piece if under 4' long; diffused general pitch not permitted

Stain—light; medium on not over 5% of face

Warp—light (§444)

126. **"C" DROP SIDING**

A choice quality, reasonably clear, and admits:
Checks—medium surface checks (not over $1/32''$ wide but over 4" long and not over 10" long)

Compression wood—prohibited if in readily identifiable and damaging form

Firm red heart—on entire face

Holes—average of not over six pin holes ($1/16''$ or less) per surface foot

Knots—sound or firm and tight, limited to small size (not over $3/4''$), except one medium (over $3/4''$ and not over $1-1/2''$) allowed also in 5" and 6" widths, and two medium in widths over 6", but sum of diameters of all knots in any 4' of length must not exceed twice diameter of maximum single knot allowed

Manufacture—standard C manufacture (§417)

Pitch—light pitch only; small closed pitch poc-

kets only, except one medium allowed also in 5" and 6" widths, and two medium in widths over 6"; medium pitch streaks only
Pith—small ($\frac{3}{4}$ square inch or less)

Shakes—slight shakes (not over $\frac{1}{32}$ " wide) if not through and not longer than width of piece

Splits—short (not longer than width of piece)

Stain—light; medium on not over 15% of face

Wane—not exceeding either $\frac{1}{16}$ " deep or 1-1/2 square inches on the surface

Warp—medium (§444)

127. C&BTR DROP SIDING

A combination quality consisting of B&B and C grades of drop siding.

128. "D" DROP SIDING

A good quality although less restricted than higher grades, and admits:

Checks—large surface checks (not over $\frac{1}{16}$ " wide and not over 20" long); medium through checks (not over $\frac{1}{32}$ " wide and not over 10" long); large through checks if otherwise
C

Compression wood—not restricted

Firm red heart—on entire face

Holes—an average of not over 12 pin holes ($\frac{1}{16}$ " or less) per surface foot

Knots—decayed small knots (not over $\frac{3}{4}$ ") permitted if their surface is smooth and even with the surrounding surface; sound, firm, encased and pith knots limited to small size in 4" width, medium (not over 1-1/2") in 5" and 6" widths, and 2" in 8", 10" and 12" widths; all knots must be tight; sum of diameters of all knots in any 4' of length must not exceed twice diameter of maximum single knot allowed

Manufacture—standard D manufacture (§418)

Pitch, pitch pockets, pitch streaks—medium pitch, medium closed pitch pockets and medium pitch streaks; pitch streaks not larger than 15% of face or the equivalent in heavy pitch, one large closed pitch pocket per piece and medium through pitch pockets allowed

Pith—not longer than $1/6$ length of piece
Shakes—slight (not over $1/32$ " wide) if not through
Splits—medium (not over $1/6$ length of piece)
Stain—light; medium limited to 25% of face
Wane—not to exceed either $1/8$ " deep or $1/2$ " wide; if otherwise C, wane not to exceed either $1/4$ " deep or $3/4$ " wide allowed
Warp—medium (§444)

129. NO. 1 DROP SIDING

Grading shall be by rules for No. 1 boards and subject to other provisions for No. 1 boards where applicable.

130. NO. 2 DROP SIDING

This grade requires each piece be as good as No. 2 boards, but excludes some pieces as good as No. 2 boards under additional requirements as follows: Pieces containing No. 2 board imperfections, such as holes, noticeably defective knots, streaks of decay and excess wane, which might prevent the use of the piece as a whole for low-cost drop siding, shall not be admitted if causing over 10% waste in any piece. The waste allowed shall be confined to one cutting area in 12' and shorter, and to two cutting areas in 14' and longer, but the usable portions after allowance for cutting must be at least 24" long. Wane in the usable portions shall not be over 1" wide and not over $1/4$ " deep. (All pieces of No. 2 EM Drop Siding must be suitable for use without waste as low-cost drop siding.)

131. No. 3 Drop Siding is designated as drop siding not because of suitability for drop siding use but only because of working and admits all pieces below No. 2 Drop Siding if suitable for low-cost sheathing or lathing without wasting over $1/4$ length of any piece. (All pieces of No. 3 EM Drop Siding must be suitable for low-cost sheathing or lathing without waste.)

MOULDINGS, MOULDED CASING AND BASE, WINDOW AND DOOR JAMBS, AND STEPPING

(It has long been recognized that Southern Pine stands foremost among the woods used for in-

terior trim. The fact that it does not mar or scar easily places it in an outstanding position to give lasting satisfaction in such uses. The ability of the wood to hold nails causes it to be all the more suitable for these purposes.)

132. Mouldings specified in 7000 and 8000 series, unless otherwise provided, shall conform to sizes and patterns in "Standard Wood Mouldings, 7000 Series" and "8000 Series Moulding Book" by pattern numbers in these publications of Southern Pine Inspection Bureau. Special and architectural mouldings, including patterns from various other moulding books and catalogs, may be specified and shall be worked to sizes and patterns as indicated in purchase orders.

133. Mouldings shall be B&B unless otherwise specified, require standard B manufacture, and 1/3 of pieces of any item may contain any one of following or equivalent; three pin holes; one pin knot; one very small pitch pocket; pitch 1" wide by 6" long or the equivalent in pitch streaks. Lengths are 4' and longer in multiples of 1', but only 3% of 4' and/or 5' and 4% of 6' and/or 7' may be included in any item.

134. Casing, base and jambs shall be graded by finish rules and subject to other finish provisions where applicable.

135. Stepping shall be of specified pattern, size and grade, but #8830 worked S3S&N1E is the staple pattern, and commonly used sizes are 1-1/4" thick by 10" and 12" wide, worked to 1-1/16" thick by 9-3/8" and 11-3/8" wide, respectively. (a) Grades B&B, C, C&Btr, and D are based on corresponding finish grades except wane on nosed edge is not permitted in C and D, and scant width in D is limited to 1/16". (b) No. 1 Stepping is not provided under these rules as a separate grade, but if specified shall be designated and graded as D Stepping. (c) No. 2 Stepping is graded by No. 2 board rules except streaks of decay and decayed knots permitted only if their surface is smooth and even with the surrounding surface; wane on nosed edge, fixed knots and through holes are not permitted; standard D manufacture is required.

PANELING

(Southern Pine paneling possesses natural beauty plus serviceability. The grades afford qualities ranging from a clear face to the knotty effects that are now so popular. Without question, there is greater diversification here than in any other type of wall. Southern Pine is particularly adaptable to many attractive finishes that assure retention of the inherent distinctive characteristics of the wood.)

136. Grades: B&B, C, C&Btr, D and No. 2. (a) Lengths per paragraph 51. (b) Shall be kiln dried to 12% moisture content or less.

137. Standard sizes for paneling are:

THICKNESS ¹ (Inches)		WIDTH (Inches)		
Nominal	Worked	Nominal	Face	Over-all
1	$\frac{3}{4}$	3	$2\frac{1}{4}$	$2\frac{1}{2}$
.....		4	$3\frac{1}{4}$	$3\frac{1}{2}$
.....		5	$4\frac{1}{4}$	$4\frac{1}{2}$
.....		6	$5\frac{1}{4}$	$5\frac{1}{2}$
.....		8	$7\frac{1}{8}$	$7\frac{3}{8}$
.....		10	$9\frac{1}{8}$	$9\frac{3}{8}$
.....		12	$11\frac{1}{8}$	$11\frac{3}{8}$

¹These thicknesses apply to all widths.

138. Paneling patterns shall conform to purchase orders but some staple patterns are shown on pages 118 to 123. Rough back is permitted only when specified.

139. Paneling fillets for use with paneling should be specified as desired. Staple patterns are on pages 124 to 126. Grading is by paneling rules. (Fillets can be useful for obtaining special patterns in overall assembly even if the main member is plain and simple like S2S&CM-EV1S. They can be used with both clear and knotty grades, although particularly advantageous with knotty grades because of desirability of keeping pattern plain and simple in such grades.)

140. B&B Paneling requires a face as good as B&B finish.

141. C&Better Paneling is a combination quality consisting of B&B and C grades, and requires face grade as good as C&Btr finish.

142. "C" Paneling requires a face as good as C finish except medium stain and wane not permitted, and only very light warp allowed.

143. "D" Paneling requires a face as good as D finish, except medium stain, scant width of face and wane not permitted, only very light warp allowed, and standard C manufacture required.

144. No. 1 Paneling is not provided under these rules as a separate grade, but if specified shall be designated and graded as D Paneling.

145. No. 2 Paneling is a highly serviceable quality, suitable for use as a whole, and admits:

Decay—streaks of heart-center decay or equivalent in unsound red heart allowed if its surface is smooth and even with surrounding surface and if not exceeding 1/2" wide by 1/4 length of piece

Holes—limited to 1/4" on face if through; surface pits and cavities limited to 1-1/4" in 2" width, 1-1/2" in 3", 4" and 5" widths, and 2" in 6" and wider

Knots—sound, firm, encased and pith knots limited to 1-1/2" in 2" width, 2" in 3" width, 2-1/2" in 4" width, 2-3/4" in 5" width, 3" in 6" width, 3-1/2" in 8" width, 4" in 10" width and 4-1/2" in 12"; decayed knots on same basis if smooth across the surface or if evidencing only minor surface pits and cavities; all knots must be tight; loose knots, hollow knots if through, and decayed knots containing serious surface pits and cavities or containing serious decay on face and reverse side unsuitable for paneling use not allowed

Manufacture—standard C manufacture (§417)

Pitch, pitch pockets and pitch streaks—not limited, except heavy pitch not permitted, and solid and clustered worm-eaten areas limited by knot sizes

Pith—not limited

Shakes, checks and splits—allowed, except through shakes, through checks and splits are limited to 1/4 length of piece, but must be close fitting

Stain—light only

Wane—not permitted

Warp—very light (§444)

146. No. 3 Paneling is designated as paneling not because of suitability for paneling use but only because of working, and admits all pieces below No. 2 Paneling if suitable for low-cost sheathing or lathing without wasting over 1/4 length of any piece.

CEILING AND PARTITION

(All of the qualities of Southern Pine which cause it to excel for interior woodwork make it eminently suitable for use as ceiling and partition. The grades afford a range of qualities suitable for all ceiling and partition uses. Usually, they are specified according to appearance or finishing requirements in the same manner as other items of interior trim.)

147. The grades of ceiling and partition are B&B, C, C&Btr, D, No. 2 and No. 3. Grading shall be by flooring rules and grades subject to other flooring provisions where applicable, but reverse side of partition shall be not more than one grade lower than face side.

148. Standard sizes for ceiling are:

THICKNESS ¹ (Inches)		WIDTH (Inches)		
Nominal ²	Worked	Nominal	Face	Over-all ³
$\frac{3}{8}$	$\frac{5}{16}$	3	$2\frac{3}{8}$	$2\frac{5}{8}$
$\frac{1}{2}$	$\frac{7}{16}$	4	$3\frac{1}{4}$	$3\frac{1}{2}$
$\frac{5}{8}$	$\frac{9}{16}$	5	$4\frac{1}{4}$	$4\frac{1}{2}$
$\frac{3}{4}$	$\frac{11}{16}$	6	$5\frac{1}{16}$	$5\frac{1}{16}$

¹These thicknesses apply to all widths.

²Board measure computed by nominal surface dimensions. (See par. 35.)

³The over-all widths for $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{5}{8}$ " thicknesses are $\frac{1}{16}$ " less. (See par. 68.)

149. Standard sizes for partition are:

THICKNESS ¹ (Inches)		WIDTH (Inches)		
Nominal	Worked	Nominal	Face	Over-all
1	$\frac{3}{4}$	3	$2\frac{3}{8}$	$2\frac{5}{8}$
.....	.....	4	$3\frac{1}{4}$	$3\frac{1}{2}$
.....	.....	5	$4\frac{1}{4}$	$4\frac{1}{2}$
.....	.....	6	$5\frac{1}{16}$	$5\frac{1}{16}$

¹This thickness applies to all widths.

150. The standard bead in ceiling and partition is depressed $\frac{1}{32}$ " below surface of piece. Rough back permitted only when specified. (See cuts on pages 128 to 130.)

OG BATTS (BATTENS)

151. Grades: B&B, C, C&Btr, D, No. 2 and No. 3. Grading shall be by flooring rules and grades subject to other flooring provisions where applicable. (See cuts on page 140.)

152. Standard sizes for OG Batts are:

THICKNESS ¹ (Inches)		WIDTH (Inches)	
Nominal ²	Worked	Nominal	Over-all
$\frac{5}{8}$	$\frac{9}{16}$	3	$2\frac{1}{4}$
.....	.....	4	$3\frac{1}{4}$

¹This thickness applies to both widths.

²Board measure computed by nominal surface dimensions. (See par. 35.)

BEVEL SIDING

153. Grades: B&B, C, C&Btr, D, No. 2 and No. 3. Grading shall be by drop siding rules and grades subject to other drop siding provisions where applicable, but slight imperfections are allowed on thin edge as will be covered by lap when laid $2\frac{1}{2}$ ", $3\frac{1}{2}$ ", or $4\frac{1}{2}$ " to weather. As production is by resawing 1" and $1\frac{1}{4}$ " S4S lumber, rough back is customary. (See cut on page 140.)

154. Standard sizes of bevel siding are:

THICKNESS ¹ (Inches)			WIDTH (Inches)		
Nominal ²	Thin Edge	Thick Edge	Nominal	Face	Over-all
$\frac{1}{2}$	$\frac{1}{16}$	$\frac{7}{16}$	4	$3\frac{5}{8}$	$3\frac{5}{8}$
$\frac{5}{8}$	$\frac{3}{16}$	$\frac{10}{16}$	5	$4\frac{5}{8}$	$4\frac{5}{8}$
.....	.....	.....	6	$5\frac{5}{8}$	$5\frac{5}{8}$
.....	.....	.....	8	$7\frac{1}{2}$	$7\frac{1}{2}$

¹These thicknesses apply to all widths.

²Board measure is computed on nominal surface dimensions. (See par. 35.)

BOARDS

(Knots in Southern Pine hold fast and are not inclined to drop out. Tremendous quantities of Southern Pine are used for sheathing and sub-flooring. It also is a superior wood for crating, boxing, shelving, form lumber and numerous other purposes. No. 1 often is specified for industrial uses where a high quality is desired, and at times is used for sheathing in better types of structures. No. 2 and No. 3 are the customary sheathing grades.)

155. The grades of boards are No. 1, No. 2, No. 3 and No. 4, and they apply to rough, dressed, shiplap and S2S&CM. (a) Lengths are per paragraph 51. (b) Moisture content limit is 19% except kiln dried limit is 15%.

156. Boards, rough, S1S or S2S that are over 1/4" scant in nominal widths of 7" and under, over 3/8" scant in 8" to 12", and over 1/2" scant in 13" and wider, shall be measured as next lower standard width and not reduced in grade.

157. Standard sizes of S4S boards are:

THICKNESS ¹ (Inches)		WIDTH (Inches)	
Nominal	Dressed	Nominal	Dressed
1	$1\frac{1}{2}$ or $1\frac{3}{4}$	2	$1\frac{5}{8}$
$1\frac{1}{4}$	$1\frac{1}{16}$	3	$2\frac{5}{8}$
$1\frac{1}{2}$	$1\frac{1}{8}$	4	$3\frac{5}{8}$
.....	.....	5	$4\frac{5}{8}$
.....	.....	6	$5\frac{5}{8}$
.....	.....	7	$6\frac{5}{8}$
.....	.....	8	$7\frac{1}{2}$
.....	.....	9	$8\frac{1}{2}$
.....	.....	10	$9\frac{1}{2}$
.....	.....	11	$10\frac{1}{2}$
.....	.....	12	$11\frac{1}{2}$
.....	.....	over 12	off $\frac{1}{2}$

¹These thicknesses apply to all widths.

*Unless thickness is particularly specified, boards may be furnished on either basis. As $2\frac{5}{32}$ " is AIS size, if $\frac{3}{4}$ " boards are grade marked the mark must indicate thickness.

158. Standard D&M and shiplapped sizes of boards are:

	THICKNESS ¹ (Inches)		WIDTH (Inches)		
	Nominal	Dressed	Nominal	Face	Over-all
Shiplap..	1	$25/32$ or $3/4$	4	$3\frac{1}{8}$	$3\frac{1}{2}$
	.....	.....	6	$5\frac{1}{8}$	$5\frac{1}{2}$
	.....	.....	8	$7\frac{1}{8}$	$7\frac{1}{2}$
	.....	.....	10	$9\frac{1}{8}$	$9\frac{1}{2}$
	.....	.....	12	$11\frac{1}{8}$	$11\frac{1}{2}$
D & M..	1	$25/32$ or $3/4$	4	$3\frac{1}{4}$	$3\frac{1}{2}$
	$1\frac{1}{4}$	$1\frac{1}{16}$	6	$5\frac{1}{4}$	$5\frac{1}{2}$
	$1\frac{1}{2}$	$1\frac{1}{16}$	8	$7\frac{1}{4}$	$7\frac{1}{2}$
	.....	.....	10	$9\frac{1}{4}$	$9\frac{1}{2}$
	.....	.....	12	$11\frac{1}{4}$	$11\frac{1}{2}$

¹These thicknesses apply to all widths.

*Unless thickness is particularly specified, boards may be furnished on either basis. As $25/32$ " is ALS size, if $3/4$ " boards are grade marked the mark must indicate thickness.

159. Detailed drawings of standard Shiplap and S2S&CM patterns are shown on page 141. If 1" boards are required S2S&CM with bead working, the bead shall conform to bead details for ceiling as shown on page 130; if specified with barn siding bead, bead working shall conform to bead details for barn siding as shown at top of page 142. If required with V working, details of V working shall conform to V details as shown in center of page 142. The bead and V workings shall be same for edge and center bead, and for edge and center V respectively, but orders should specify if requiring edge bead only or center bead only, or both.

160. End-matched boards of various patterns and workings, if required, shall be graded according to regular No. 1, No. 2 and No. 3 grades of boards, and shall conform to lengths and bundling provisions of paragraph 119.

161. NO. 1 BOARDS

This grade evidences some of the good appearance characteristics of finishing lumber, although intended under these rules only as a superior quality for a variety of general uses, and admits:

Firm red heart—on entire face

Holes—limited number pin holes ($1/16''$ or less) well scattered

Knots—sound, firm, encased and pith knots, but must be tight, and limited to $1-1/4''$ in $2''$ width, $1-1/2''$ in $3''$, $4''$ and $5''$ widths, $2''$ in $6''$ and $8''$ widths, $2-1/2''$ in $10''$ and $12''$ widths

Manufacture—standard D manufacture (§418)

Pitch, pitch pockets and pitch streaks—heavy pitch limited to 25% of face; large closed pitch pockets; large pitch streaks; worm-eaten pitch if solid across its face and limited to combined area not over one square inch in any $6''$ of length

Pith—not limited

Shakes, checks and splits—medium shakes (not over $1/8''$ wide) if not through; surface checks; medium through checks (not over $1/32''$ wide and not over $10''$ long); medium splits

Stain—light; medium limited to 25% of face

Wane—not to exceed either $1/4''$ deep or $1/8$ width or $1/3$ length on face and limited to $1/2''$ deep on reverse side; in D&M wane shall not be so deep as to extend into tongue or over $1/2$ thickness of top lip of groove, or for over $1/2$ thickness of face lap in shiplap

Warp—heavy (§444)

162. NO. 2 BOARDS

Suitable for high quality sheathing and a multitude of other general uses, and admit:

Decay—in streaks of heart-center decay not to exceed $1/2''$ wide by $1/4$ length of piece, or equivalent in unsound red heart

Holes—up to $1/4''$ not limited; one through hole over $1/4''$ but not over $1''$; surface pits and cavities limited by No. 1 knot sizes

Knots—sound, firm, encased and pith, limited to $1-1/2''$ in $2''$ width, $2''$ in $3''$ width, $2-1/2''$ in $4''$ width, $2-3/4''$ in $5''$ width, $3''$ in $6''$ width, $3-1/2''$ in $8''$ width, $4''$ in $10''$ width, $4-1/2''$ in $12''$, and $5''$ if over $12''$; decayed knots on same basis if smooth across surface or if evidencing only minor surface pits or cavities; decayed knots limited by No. 1 knot sizes if containing serious surface

pits or cavities; hollow knots limited by No. 1 knot sizes and through openings in them limited as through holes; all knots fixed or tight, except loose knots limited as through holes.

Manufacture—standard E manufacture (§419)

Pitch, pitch pockets and pitch streaks—not limited, except solid and clustered worm-eaten areas limited by knot sizes

Pith—not limited

Shakes, checks and splits—not limited, except through shakes, through checks and splits limited to $\frac{1}{4}$ length of piece, but must be close fitting

Stain—medium

Wane—on face not to exceed either $\frac{1}{4}$ width or 2" wide; on one or both edges allowing a sharp edge on occasional piece for not over 8" long provided overall width not reduced but generally requiring $\frac{1}{8}$ " edge or better, and allowing a very short wane dip on edge of occasional piece provided opening not larger than 1" hole

Warp—very heavy (§444)

163. NO. 3 BOARDS

Suitable for low-cost sheathing and other low-cost construction uses without waste, and admits:

Decay—unsound red heart and equivalent decay provided suitable for nailing throughout

Holes—surface pits not limited; through holes $\frac{1}{3}$ width if under 4" wide; 1- $\frac{1}{2}$ " sizes in 4", 5" and 6" widths; $\frac{1}{4}$ width if 8" and wider

Knots—tight and fixed knots not limited except must be suitable for ordinary handling without breakage; loose knots and through openings in hollow knots limited by restrictions for holes

Manufacture—standard F manufacture (§420)

Pitch, pitch pockets and pitch streaks—not limited except through pockets limited by restrictions for holes

Pith—not limited

Shakes, checks and splits—completely separated through shakes, through checks and splits $\frac{1}{2}$ length of piece provided split sections

reasonably close fitting; splits involving partially separated sections, such as roller splits and splits in series allowed full length of piece if adequately bonded for ordinary handling without coming apart

Stain—medium

Wane—not to exceed $\frac{1}{3}$ width on face or $\frac{3}{4}$ width on reverse side, except short wane dips allowed on reverse side if not over $\frac{1}{8}$ " deep at thickest point of wood across width and if not within first 8" at end

Warp—50% more than in No. 2 (§444)

164. No. 4 Boards admit pieces below No. 3 which can be used without waste, or which contain waste not to exceed $\frac{1}{4}$ length by cutting into two or three usable lengths of at least 24" each, and the usable portions and full-length pieces admit: standard G manufacture; wane on face or reverse side if showing saw or knife marks on both edges and surfaces, and not exceeding $\frac{1}{2}$ width, except short wane dips allowed if not over $\frac{1}{8}$ " deep at thickest point and if not within first 8" of usable portion or at end; miscuts scant of standard dressed width not more than $\frac{3}{8}$ " in 4" width, $\frac{1}{2}$ " in 6", $\frac{5}{8}$ " in 8", $\frac{3}{4}$ " in 10", $\frac{7}{8}$ " in 12". Wane dips covering full surface and/or edges permitted in waste area if reducing cross section not more than one-half.

BOX AND BARK STRIP GRADES

(The Box grades are produced in very limited volume, but are maintained to meet needs of some buyers. It is not contemplated that the Box grades will be stocked by retail dealers or used in house construction, and they are not recommended for such purposes.)

165. No. 2 Box Dimension as to thickness, widths, lengths, dressed sizes, workings and moisture content, shall be governed by same provisions as No. 2 dimension, permits open grain, does not permit waste, and admits following or equivalent: sound, firm, encased and pith knots which do not occupy more than one-half the cross section at any point; loose, hollow or decayed knots, and knot holes one-half the maximum size knots permitted; through checks; standard F manufacture; through pitch pockets; pitch, pith; through shakes;

medium splits; 1" streaks of decay not to exceed 1/4 length of piece; red heart; medium stain; wane not to exceed 1/3 the wide face and each piece to have a 1/2" nailing edge at every part of length of narrow face; light warp.

166. **No. 1 Box and No. 2 Box boards**, as to thicknesses, widths, lengths, dressed sizes, workings and moisture content shall be governed by same provisions as No. 1 and No. 2 boards, respectively. Where edge widths are specified, measurement is according to paragraph 36. (a) **No. 1 Box boards** consist of lumber below grade of No. 1 boards, except as hereinafter provided, and admit following or equivalent: knots of quality required in No. 1 boards up to sizes permitted in No. 2 boards; knots of lower quality as permitted in No. 2 boards if limited to sizes required in No. 1 boards, except only tight knots permitted; pin worm holes; medium cup; crook as in No. 2 boards; checks; standard E manufacture; light pitch; not exceeding 25% medium pitch; not exceeding 5% heavy pitch, pitch pockets; pith; medium shakes; medium splits; medium holes; not exceeding 25% firm red heart; light stain; not exceeding 25% medium stain; wane as in No. 1 boards. Pieces otherwise No. 1 boards will be admitted in No. 1 Box if containing not to exceed 50% firm red heart and not to exceed 33-1/3% medium stain; pieces otherwise C admitted in No. 1 Box if containing firm red heart and not to exceed 50% medium stain; pieces otherwise B&B admit unlimited medium stain. (b) **No. 2 Box boards** consist of lumber below grade of No. 1 Box which may contain waste not exceeding 25% in any piece, except bark strips or spur ends in which wane destroys overall width or overall thickness not permitted, and provided 75% of each piece grades at least as good as No. 1 Box. Unsound red heart, objectionable knots, excess splits and other imperfections (except bark strips and wane as described above) as excluded from usable portion admitted if within limitations on waste, provided in widths of 6" and less waste so located in each piece as to permit ripping and/or cross-cutting to develop pieces not less than 3" wide and/or not less than 1' long, and provided in widths of 7" and over

waste so located in each piece as to permit cross-cutting only to develop pieces not less than 1' long. (c) Dunnage lumber is below grade of No. 2 Box, but not lower than No. 4 boards.

167. B&B Bark Strips consist of lumber containing wane but edges of each piece for full length must show at least 1/2" free of wane, except that 10% of an item or shipment may show less than 1/2" free of wane if both sides are 75% free of wane; otherwise, wane not restricted and inspection may be from either side of piece, but in other respects this grade shall be equal to B&B finish. (a) B&B Bark Strip partition is worked from B&B Bark Strips and edges of each piece for full length must show at least 7/16" free of wane, except 10% of item or shipment may show less than 7/16" free of wane if both sides 75% free of wane. (b) Box Bark Strips consist of all bark strips below B&B Bark Strips; when resawn, mill inspection and tally are final.

BED SLATS

168. Bed Slats shall be graded as B&B, C, C&Btr, D, No. 1, No. 2 and No. 3 by rules for 1" S4S lumber. The 1x3 and 1x4 shall be S2S&N2E to 3/4" thick by 2-5/8" and 3-5/8" overall widths, respectively. Lengths are 3'3" and 4'6", but other lengths may be specified as desired; the overlength or underlength tolerance may not exceed 1/8". Edges shall be nosed on 1/2" to 3/4" radius.

PICKETS

169. Pickets shall be graded as B&B, C, C&Btr, D, No. 1, No. 2 and No. 3 by rules for 1" S4S. Flat pickets of nominal sizes 1"x3", 3' and 4' long, shall be S4S to 3/4"x2-1/4" and headed or pointed. Square pickets of nominal sizes 1-1/4"x 1-1/4" and 1-1/2"x1-1/2", 3' and 4' long, shall be S4S to 1-1/16"x1-1/16" and 1-5/16"x1-5/16" respectively, and pointed.

SHOP GRADES

170. Shop grades shall be limited in moisture content as in D and better finish. (a) No. 1 Shop, 4/4" to 8/4" thick, shall consist of lumber 4"

and wider, 6' and longer, averaging 8" wide, not less than 60% of each piece to cut or rip, or both, B&B pieces at least 3"x4' or 6"x3' graded from poor face. (b) No. 2 Shop, 4/4" to 8/4" thick, shall be same as No. 1 Shop except average width is 7", and percentage of cuttings and rippings is 40% or better.

FENCE AND PLASTER LATH

171. Fence Lath shall be of nominal size 1/2" by 1-1/2", in 36", 42", 48", 60" or 72" length as specified. Plaster Lath shall be of nominal size 3/8" by 1-1/2", in 32" or 48" length as specified. Other thicknesses, widths and lengths may be specified. Lath usually are rough but dressed lath may be specified. (a) No. 1 Lath admit: pin holes; pin knots if sound or firm and tight; pitch; pitch streaks; medium pitch pockets; stain; wane 1/8" deep, 1/4" wide and 6" long; slope of grain without limit in Plaster Lath but limited to 1" in 6" of length in Fence Lath and measured to include any short local deviations; 3/8" crook in 48" length. Green lath shall be not over 1/16" scant of nominal thickness and width. Dry lath shall be not over 3/32" scant of nominal thickness and not over 3/16" scant of nominal width. Lath shall be exact length, except Fence Lath permit 1/4" overlength and Plaster Lath permit not more than 20% of a shipment to be short in length not over 1/2". (b) No. 2 Lath admit: medium holes; small knots if sound or firm and tight; unsound pin knots; wane 1/4" deep, 1/2" wide and 1/2 length of piece, except longer wane permitted if less than 1/4" deep and 1/2" wide; scantness in dry lath not exceeding 1/8" scant thickness and 1/4" scant width; 1/4" overlength in Fence Lath, and 3/4" scant length in Fence and Plaster Lath. (c) No. 3 Lath are intended for a variety of utility purposes and admit pieces below No. 2 that can be bundled without breakage, but may be not more than 3/16" scant of nominal thickness and 1/2" scant of nominal width, not over 1/4" oversize in thickness and width, and not over 6" short in occasional pieces; may have wane tapered ends for 6" of length, but remaining length shall have wood at every point equivalent to 1/3 cross section.

MEASUREMENT OF KNOTS IN 2" DIMENSION

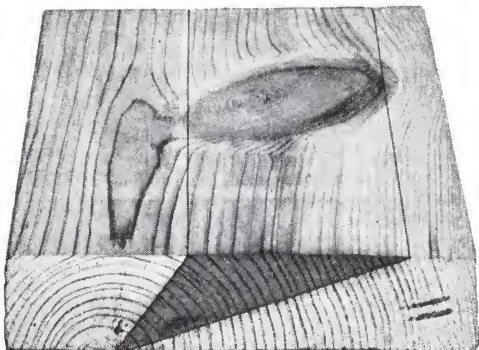


Fig. 12

While graders and inspectors are trained to depend on their judgment in appraising the size of a knot or the amount of cross-section occupied, exact measurements may be made if necessary.

Figures 12 and 13 illustrate how knots are measured in 2" dimension. The knot in Figure 12 appears very damaging, but it will be seen from the reverse side of this piece (Figure 13) that it tapers off to a size that is ordinarily of no practical significance in the grading of lumber.

To determine the area of the cross-section occupied by this knot, lines enclosing the knot are drawn on each surface, paralleling the edges of the piece; when brought together on the end (the shaded area) the percentage of cross-section occupied is evident. For exact calculation, the average of the measurements between the lines on the two surfaces is multiplied by the actual thick-

MEASUREMENT OF KNOTS IN 2" DIMENSION (cont.)

ness of the piece. In this case, the knot on one side measures $3\frac{3}{4}$ " and on the other $1\frac{1}{8}$ " averaging $1\frac{15}{16}$ ". As this is a dressed 2x8, the $1\frac{15}{16}$ " average diameter is multiplied by the $1\frac{5}{8}$ " thickness to produce 3.15 square inches as the area of cross section occupied by this knot. This area is considered in relation to the total cross section of a dressed 2x8 or 12.19 square inches. We thus see that this knot occupies more than one-fourth and less than one-third the cross section of the piece. Knots in other widths of 2" dimension would be measured in similar manner and related to 5.89 square inches in the cross section of a dressed 2x4, 9.14 in 2x6, 15.44 in 2x10, and 18.69 in 2x12. Where a knot extends to both wide faces of a rough or blanked piece, the average diameter is multiplied by the actual thickness to determine the area of cross section occupied by the knot in such piece.

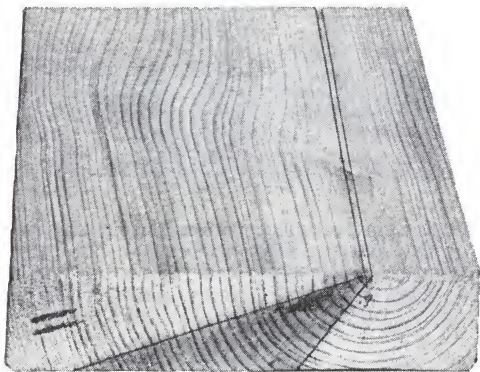


Fig. 13

DENSITY RULE BASIS OF MEASUREMENT

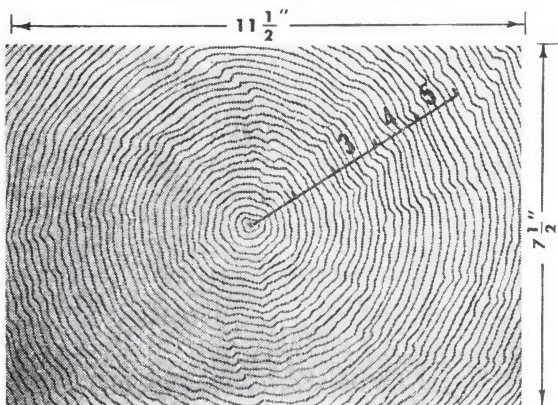


FIG. 1



FIG. 2

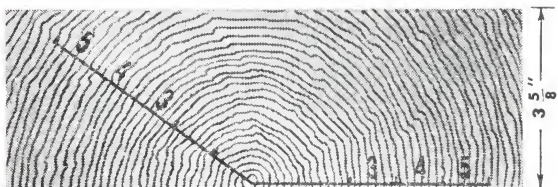


FIG. 3

Illustrations of pieces containing pith with 5" radial line present. As provided in the rule, the measurement in such pieces is to be "over the third, fourth and fifth inches from the pith along the radial line." If alternate 5-inch radial lines are available, the measurement is made over the third, fourth and fifth inches from the pith along the particular radial line that presents a fair average of the growth on the cross-section. (See par. 9.)

MEASUREMENT OF DENSITY (cont.)

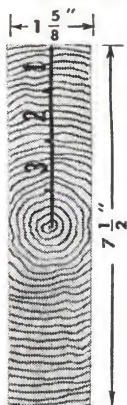


FIG. 4

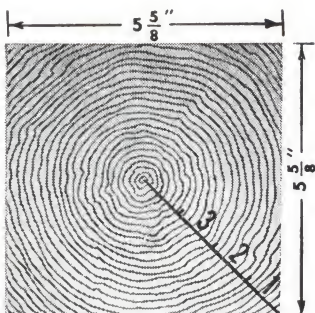


FIG. 5

Pieces containing pith but lacking 5-inch radial line. Figures 4 and 5 are either 2x8 in cross-section or show over 16 square inches on the cross-section. In such pieces measurement is made on three inches farthest from pith. Figures 6 and 7 are either less than 2x8 in cross-section or do not show over 16 square inches on the cross-section. In such pieces measurement is made on second inch from pith. As in case of pieces containing pith and a 5-inch radial line, measurement for pieces having less than a 5-inch radial line may be shifted to secure fair average of growth on cross-section, provided such measurement is on the three inches farthest from pith or on second inch from pith, as case may be. (See par. 9.)



FIG. 6

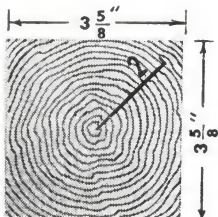


FIG. 7

MEASUREMENT OF DENSITY (cont.)

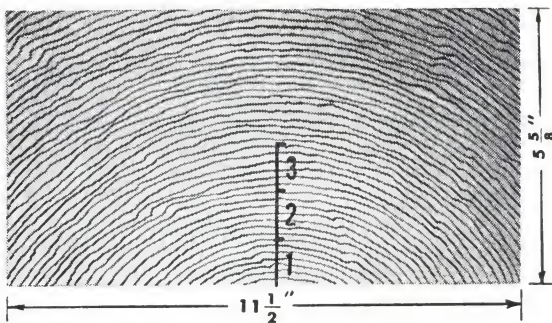


FIG. 8

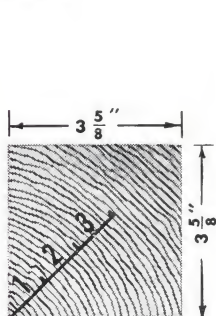


FIG. 9

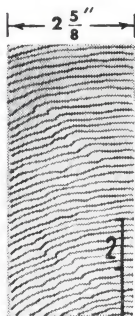


FIG. 10



FIG. 11

Illustrations of pieces not containing the pith. Figures 8 and 9 are over 3" thick, and as provided in the rule, the measurement is "over 3 inches on an approximate radial line beginning at the edge nearest the pith." Figures 10 and 11 are 3" or less in thickness and the measurement is made "on the second inch nearest the pith." In pieces not containing the pith, the radial line is fixed by the requirement that the measurement must begin at the edge nearest the pith, and the point of measurement cannot be shifted. (See par. 9.)

SECTION III

Dimension (2")

Timbers and Heavy Dimension Structural Lumber

2" DIMENSION

(As 2" dimension is used in large quantities for joists, studs and rafters, strength as well as uniformity and fullness of size are most important. Southern Pine always has been a characteristically dense species, and current growth yields a high percentage of dense timber. As the density of the wood increases, there is a corresponding increase in strength, hardness, etc. A building properly fabricated of dense lumber, therefore, is not only capable of carrying heavy loads but is also better able to withstand unusual forces, such as hurricanes, tornadoes, earthquakes, etc. Hardness also denotes an increase in ability to stand heavy wear and abuse. Finally, Southern Pine dimension of 2" thickness is required not to exceed a maximum moisture content. This is extremely important in floor joists not only with respect to uniform sizes and load-bearing, but if green joists are used their lower stiffness can result in objectionable deflection and this deflection may become permanent as the joists dry out in the structure.)

201. The stress grades of 2" dimension and applicable stress ratings are shown in following table. These grades are graded and rated for strength, with stress ratings based on conditions

of use and subject to adjustments as specified in footnotes of paragraph 239.

Grade	Para- graph No.	Extreme Fiber in Bending "f" Tension Parallel to Grain "q"	Com- pression Across Grain "c⊥"	Hori- zontal Shear "H"	Com- pression Parallel to Grain "c"
No. 1	209	1500	390	120	1350
No. 1 KD.....	210	1750	390	135	1500
No. 1 Dense.....	211	1750	455	120	1550
No. 1 Dense KD.	212	2050	455	135	1750
No. 2	213	1200	390	105	900
No. 2 KD.....	214	1500	390	120	1100
No. 2 Dense.....	215	1400	455	105	1050
No. 2 Dense KD.	216	1750	455	120	1300
Special	217	1100	290	85	725
Special KD	218	1350	290	85	910
No. 3	219	600	290	50	400
No. 3 KD.....	220	750	290	50	470
No. 3 MG.....	221	670	390	65	500
No. 3 MG KD...	222	840	390	80	630
No. 3 Dense.....	223	780	455	65	590
No. 3 Dense KD.	224	980	455	80	735

Modulus of Elasticity, "E", is 1,760,000 for all grades except paragraphs 217, 218, 219 and 220 which permit wide-ring growth and therefore rate 1,320,000.

202. Higher stress ratings for lumber 2" thick and less seasoned to a moisture content not in excess of 15% are applicable when the following conditions are met: (a) The lumber if dressed to standard size must have been 15% moisture content or lower at the time of dressing. (b) The conformity of the lumber to the grade requirements, including moisture content, must be satisfactorily assured. (SPIB grade marks constitute one means of providing acceptable and satisfactory assurance.) (c) The lumber must be protected so as to maintain it at a moisture content not in excess of 15% and must be used continuously dry as in most covered structures.

203. The stress ratings for kiln-dried lumber 2" thick and less, as shown in paragraphs 201, 240 and 317, apply also to air-dried lumber 2" thick and less if moisture content does not exceed 15% and if otherwise conforming to para-

graph 202. The 15% maximum moisture content for such lumber shall be specified or designated as "KD" if limited to kiln dried, or as "MC 15" to indicate either air dried or kiln dried, or both. Whenever such lumber is specified or sold, satisfactory assurance of proper quality as to grade and moisture content shall be provided through SPIB grade marking unless other means of providing such assurance is specified by ultimate buyer or unless order specifically indicates grade marking is not required.

204. **Rough Sizes:** 2" thick; 2", 3", 4", 5", 6", 8", 10" and 12" wide. (For minimum dry sizes see paragraphs 40 and 41.)

205. **Dressed Sizes:** 1-5/8" thick. (See paragraphs 44 and 45.) 1-5/8", 2-5/8", 3-5/8", 4-5/8", 5-5/8", 7-1/2", 9-1/2" and 11-1/2" wide. (See paragraph 45.) Dimension may be worked S2S&CM, S2S&SM or other specified pattern; orders for T&G or D&M working which do not indicate the exact working desired shall be construed as applying to S2S&CM. (Note drawings on pages 143 and 144.)

206. **Lengths** per paragraph 51.

207. **The moisture content** for No. 1, No. 2 and No. 3 grades of 2" dimension, in widths 12" and less and in lengths 24' and less, shall not exceed 19%, but if specified, represented or grade marked as kiln dried, the limit shall be 15%. The limits for other sizes, if desired, should be specified.

208. Where knots at edges of wide faces are restricted by the amount of cross section occupied, any knots located on narrow faces or at junction of wide and narrow faces shall be restricted on same basis.

209. NO. 1 DIMENSION

A superior framing, rates 1500f in bending stress, with other ratings as per paragraph 201, must be medium grain and admits:

Compression wood—prohibited if in readily identifiable and damaging form

Grain deviation—slope limited to 1" in 10"

Firm red heart—not limited

Holes—occasional, limited to 1/4" through opening

Knots—sound, firm, encased and pith knots, but must be tight, and may occupy not more than $1/4$ cross section at edge of wide face, or $1/3$ cross section away from edge; decayed and hollow knots, but must be tight, and may occupy not more than $1/6$ cross section at any point with hollow knots limited to $1/4$ " through opening

Manufacture—standard E manufacture (§419) except heavy raised grain allowed, and occasional full length HorM on narrow surface limited to $1/32$ " scant width

Pitch, pitch pockets and pitch streaks—heavy pitch; large closed pitch pockets, large pitch streaks

Pith—not limited

Shakes, checks and splits—checks and medium shakes if penetrate not deeper than $3/4$ ", except through shakes, through checks and splits allowed if not longer than width of piece

Wane—averaging $1/4$ thickness by $1/4$ width by $1/4$ length, but not to exceed either 1" of thickness, $1/3$ width or $1/3$ length

Warp—one-half medium (§444)

210. **No. 1 KD Dimension** conforms to all requirements of paragraphs 202 and 209, and rates 1750f in bending stress, with other ratings as per paragraph 201.

211. **No. 1 Dense Dimension** conforms to all requirements of paragraphs 6 and 209, and rates 1750f in bending stress, with other ratings as per paragraph 201. (a) **No. 1 Longleaf Dimension** is stress rated and graded same as No. 1 Dense except longleaf required.

212. **No. 1 Dense KD Dimension** conforms to all requirements of paragraphs 6, 202 and 209, and rates 2050f in bending stress, with other ratings as per paragraph 201. (a) **No. 1 Longleaf KD Dimension** is stress rated and graded same as No. 1 Dense KD except longleaf required.

213. NO. 2 DIMENSION

A substantial construction framing, rates 1200f in bending stress, with other ratings as indicated in paragraph 201, must be medium grain and admits:

Compression wood—prohibited if in readily identifiable and damaging form

Grain deviation—slope limited to 1" in 8"

Decay—streaks of heart-center decay not over $\frac{1}{3}$ thickness or $\frac{1}{3}$ width

Firm red heart—not limited

Holes—limited to 1" through openings

Knots—sound, firm, pith and encased knots, which occupy not more than $\frac{3}{10}$ cross section at the edge of wide face, or $\frac{1}{2}$ cross section away from edge; decayed, fixed and hollow knots, which occupy not more than $\frac{3}{10}$ cross section at any point, with hollow knots limited to 1" through openings

Manufacture—standard F manufacture (§420) except occasional scant width and thickness from full length skip permitted if limited to $\frac{1}{8}$ " scantness, but required to be No. 1 otherwise throughout any portion scant over $\frac{1}{16}$ "

Pitch, pitch pockets and pitch streaks—not limited except through pockets limited as for holes

Pith—not limited

Shakes, checks and splits—shakes and checks if penetrate not deeper than 1" except through shakes, through checks and splits allowed if not longer than 1- $\frac{1}{4}$ times width

Stain—medium

Wane—averaging $\frac{1}{3}$ thickness by $\frac{1}{3}$ width but not to exceed either 1- $\frac{1}{8}$ " of thickness or $\frac{1}{2}$ width

Warp—light (§444)

214. No. 2 KD Dimension conforms to all requirements of paragraphs 202 and 213, and rates 1500f in bending stress, with other ratings as per paragraph 201.

215. No. 2 Dense Dimension conforms to all requirements of paragraphs 6 and 213, and rates 1400f in bending stress, with other ratings as

per paragraph 201. (a) No. 2 Longleaf Dimension is stress rated and graded same as No. 2 Dense except longleaf required.

216. No. 2 Dense KD Dimension conforms to all requirements of paragraphs 6, 202 and 213, and rates 1750f in bending stress, with other ratings as per paragraph 201. (a) No. 2 Longleaf KD Dimension is stress rated and graded same as No. 2 Dense KD except longleaf required.

217. Special Dimension conforms to all requirements of paragraph 213, except is based on wide ring instead of requiring medium grain, and rates 1100f in bending stress, with other ratings as per paragraph 201.

218. Special KD Dimension conforms to all requirements of paragraphs 202 and 213, except is based on wide ring instead of requiring medium grain, and rates 1350f in bending, with other ratings as per paragraph 201.

219. NO. 3 DIMENSION

Suitable for general utility framing, is stress rated as per paragraph 201, and admits:

Compression wood—prohibited if in readily identifiable and damaging form

Decay—streaks of heart-center decay and unsound red heart if not over 1/2 thickness by 1/2 width at any point

Grain deviation—slope limited to 1" in 6"

Holes—knot hole or equivalent if occupying not over 1/3 cross section

Knots—not limited as to quality, but may occupy not over 4/9 cross section if located at edge of wide face and not over 2/3 cross section if away from the edge

Manufacture—standard F manufacture (§420) except occasional scant width and thickness from full length skip permitted if limited to 3/16" scantness but must be as good as No. 2 throughout any portion scant over 1/16"

Pitch, pitch pockets and pitch streaks—pitch and pitch streaks not limited; pitch pockets and worm-eaten pitch permitted if in con-

junction with knots the strength not reduced more than by maximum size knot permitted

Pith—not limited

Shakes, checks and splits—shakes and checks if penetrate not deeper than 1-1/4" except through shakes, through checks and splits allowed if not longer than 2 times width

Stain—medium

Wane—averaging 1/3 thickness by 1/3 width, but not to exceed either 1-3/8" of thickness or 2/3 width, and to provide at least 1/4" nailing edge throughout length of both narrow faces

Warp—medium (§444)

220. No. 3 KD Dimension conforms to all requirements of paragraphs 202 and 219, and rates 750f in bending stress, with other ratings as per paragraph 201.

221. No. 3 MG Dimension conforms to all requirements of paragraphs 5 and 219, and rates 670f in bending stress, with other ratings as per paragraph 201.

222. No. 3 MG KD Dimension conforms to all requirements of paragraphs 5, 202 and 219, and rates 840f in bending stress, with other ratings as per paragraph 201.

223. No. 3 Dense Dimension conforms to all requirements of paragraphs 6 and 219, and rates 780f in bending stress, with other ratings as per paragraph 201. (a) No. 3 Longleaf Dimension is stress rated and graded same as No. 3 Dense except longleaf required.

224. No. 3 Dense KD Dimension conforms to all requirements of paragraphs 6, 202 and 219, and rates 980f in bending stress, with other ratings as per paragraph 201. (a) No. 3 Longleaf KD Dimension is stress rated and graded same as No. 3 Dense KD except longleaf required.

225. No. 4 Dimension admits pieces below No. 3 which can be used without waste, or which contain waste not to exceed 1/4 length by cutting into two or three usable lengths of at least 24"

each, and the usable portions and full-length pieces admit: standard G manufacture; wane on face or reverse side if showing saw or knife marks on both edges and surfaces, and if not exceeding $1/2$ width, except short wane dips allowed if not over $1/8$ " deep at thickest point and if not within first 8" of usable portion or at end; miscuts scant of standard dressed width not more than $3/8$ " in 4" width, $1/2$ " in 6", $5/8$ " in 8", $3/4$ " in 10", $7/8$ " in 12". Wane dips covering full surface and/or edges are permitted in waste area if reducing cross section not more than one-half.

TIMBERS AND HEAVY DIMENSION

(Southern Pine always has been recognized as a superior wood for heavy timber construction. This is so because of its high strength properties and also because of the surplus values inherent in Southern Pine due to its density. It rates extremely high in nail and bolt-holding power, and it outranks all other species in the ease with which it may be treated with preservatives. Southern Pine is distinctive in its ability to take and retain salts and oils under pressure, and in addition the cellular structure is such that full penetration of the sapwood is easily attained.)

226. Sizes: 2x14 and wider, 2- $1/2$ " thick by all widths, and 3x3 and larger.

227. Minimum rough thicknesses and widths (green or dry) for lumber over 2" thick are $1/4$ " scant of nominal for faces under 8", and $3/8$ ", scant for 8" and up.

228. Standard dressed thicknesses and widths (green or dry) of lumber over 2" thick, S1E and S1S to S4S, are $3/8$ " scant of nominal for faces under 8", and $1/2$ " scant for 8" and over.

229. Lengths unless otherwise specified shall be supplied in 10' to 16', 18' or 20' for SE&S, and per paragraph 51 for No. 1, No. 2 and No. 3 except allowing only 8' and longer in No. 1, and only 6' and longer in No. 2 and No. 3.

STRESS-RATED GRADES

230. The stress grades of general-use timbers and heavy dimension, and applicable stress ratings, are shown in following table. These grades are graded and rated for strength, with stress ratings based on conditions of use and subject to adjustments as specified in footnotes of paragraph 239.

Stress Rated Grade	Extreme Fiber in Bending "f" Tension Parallel to Grain "t"		Com- pres- sion Across Grain "c⊥"	Hori- zontal Shear "H"	Compression Parallel to Grain "c"	
	3" & 4"	5" Up			3" & 4"	5" Up
No. 1 SR.....	1500	1400	390	120	1500	1300
No. 1 Dense SR	1750	1600	455	120	1750	1500
No. 2 SR.....	1200	1200	390	105	900	900
No. 2 Dense SR	1400	1400	455	105	1050	1050

Modulus of Elasticity, "E",..... (All grades) 1,760,000

231. NO. 1 SR TIMBERS AND HEAVY DIMENSION

A staple quality for general construction purposes, are stress rated per paragraph 230, must be medium grain, and admit:

Compression wood—prohibited if in readily identifiable and damaging form

Decay—in knots only

Firm red heart—not limited

Grain deviation—slope limited to 1" in 10"

Holes—medium if well scattered

Knots—sound, firm, encased and pith knots, which occupy not over 1/4 cross section; decayed knots, which occupy not over 1/6 cross section, except any decay must be confined to knot itself, not be in surrounding wood, and not penetrate deeper than 1-1/2"

Manufacture—standard E manufacture (§419) except scant width limited to 1/16"

Pitch, pitch pockets and pitch streaks—not limited

Pith—not limited

Shakes, checks and splits—splits not longer than thickness of piece; shakes and surface

checks not deeper than $1/3$ thickness if not dry and $3/8$ thickness if dry
Stain—not limited unless specified to be dry
Wane—to occupy not more than $1/6$ width of face and $1/3$ length, except in heavy dimension widths of 8" and up, wane not exceeding $3/8$ thickness allowed on one edge
Warp—very light (§444)

232. No. 1 Dense SR Timbers and Heavy Dimension conform to all requirements of paragraphs 6 and 231, with stress ratings as per paragraph 230. (a) No. 1 Longleaf SR is stress rated and graded same as No. 1 Dense SR except longleaf required.

233. NO. 2 SR TIMBERS AND HEAVY DIMENSION

An acceptable quality for a wide range of general-use purposes, are stress rated per paragraph 230, must be medium grain, and admit:

Compression wood—prohibited if in readily identifiable and damaging form

Decay—in knots only

Firm red heart—not limited

Grain deviation—slope limited to 1" in 8"

Holes—limited to 1-1/2" in diameter

Knots—sound, firm, encased and pith knots, which occupy not over $3/10$ cross section if on narrow face or at edge of wide face, and not more than $1/2$ cross section if away from edge; decayed, fixed, loose and hollow knots, which may neither exceed 3" in least diameter nor occupy over $1/4$ cross section at any point in piece, except any decay must be confined to knot itself, not be in surrounding wood, and not penetrate deeper than 2"

Manufacture—standard F manufacture (§420) except occasional scant width and thickness from full length skip limited to $1/8$ " permitted, but must be No. 1 otherwise throughout any portion scant over $1/16$ "

Pitch, pitch pockets and pitch streaks—not limited

Pith—not limited

Shakes, checks and splits—splits not longer than 1-1/4 times thickness of piece; shakes

and surface checks not deeper than $\frac{3}{8}$ thickness if not dry and $\frac{1}{2}$ thickness if dry
Stain—not limited unless specified to be dry
Wane—on any face limited to $\frac{1}{4}$ face at one edge and $\frac{1}{3}$ face on both edges, except in heavy dimension widths of 8" and up, wane not exceeding $\frac{5}{8}$ thickness allowed on one edge
Warp—light (§444)

234. No. 2 Dense SR Timbers and Heavy Dimension conform to all requirements of paragraphs 6 and 233, with stress ratings as per paragraph 230. (a) No. 2 Longleaf SR is stress rated and graded same as No. 2 Dense SR except longleaf required.

NONSTRESS GRADES

235. Square Edge & Sound Timbers and Heavy Dimension are not stress rated, permit open grain, and admit:

Compression wood—not restricted

Knots—sound, pith, intergrown and encased knots occupying not over $\frac{1}{2}$ cross section
Manufacture—standard E manufacture (§419) except scant width limited to $\frac{1}{16}$ "

Pitch, pitch pockets and pitch streaks—not limited

Pith—not limited

Shakes, checks, and splits—short splits, seasoning checks not limited; pith shakes, if not through piece from one surface to another; ring shakes that do not extend to surface

Stain—not limited unless specified to be dry

Wane—limited to $\frac{1}{8}$ width of face and $\frac{1}{4}$ length

Warp—very light (§444)

(Unsound, loose and hollow knots, and decay not permitted.)

236. No. 1 Timbers and Heavy Dimension are not stress rated, permit open grain, and admit:

Compression wood—not restricted

Decay—in knots only

Firm red heart—not limited

Grain deviation—not limited

Holes—medium if well scattered

Knots—sound, firm, encased and pith knots,

which occupy not over $1/4$ cross section; decayed knots, which occupy not over $1/6$ cross section, except any decay must be confined to knot itself, not be in surrounding wood, and not penetrate deeper than $1-1/2''$
Manufacture—standard E manufacture (§419)
except scant width limited to $1/16''$

Pitch, pitch pockets and pitch streaks—not limited

Pith—not limited

Shakes, checks and splits—splits not longer than thickness of piece; shakes and surface checks

Stain—not limited unless specified to be dry

Wane—to occupy not more than $1/6$ width of face and $1/3$ length, except in heavy dimension widths of $8''$ and up, wane not exceeding $3/8$ thickness allowed on one edge

Warp—very light (§444)

237. No. 2 Timbers and Heavy Dimension are not stress rated, permit open grain, and admit:

Compression wood—not restricted

Decay—heart-center decay or unsound red heart and equivalent streaks of other living-tree decay but limited to occupying 10% cross section if wholly enclosed within four surfaces of each piece and 5% otherwise

Firm red heart—not limited

Grain deviation—not limited

Holes—limited to $1-1/2''$ in diameter

Knots—sound, firm, encased and pith knots, which occupy not over $1/3$ cross section if on narrow face or at edge of wide face, and not over $1/2$ cross section if away from edge; decayed, fixed, loose and hollow knots, which may neither exceed $3''$ in least diameter nor occupy over $1/4$ cross section at any point in piece, except any decay must be confined to knot itself, not be in surrounding wood, and not penetrate deeper than $2''$

Manufacture—standard F manufacture (§420)
except occasional scant width and thickness from full length skip limited to $1/8''$ permitted, but must be No. 1 otherwise throughout any portion scant over $1/16''$

Pitch, pitch pockets and pitch streaks—not limited

Pith—not limited

Shakes, checks and splits—splits not longer than $1\frac{1}{4}$ times thickness of piece; shakes and surface checks

Stain—not limited unless specified to be dry

Wane—on any face limited to $\frac{1}{4}$ face at one edge and $\frac{1}{3}$ face on both edges, except in heavy dimension widths of 8" and up, wane not exceeding $\frac{5}{8}$ thickness allowed on one edge

Warp—light (§444)

238. No. 3 Timbers and Heavy Dimension suitable for bracing, blocking, bulkheading, and numerous other general utility purposes, permit open grain and admit: very heavy slope of grain; advanced decay and unsound red heart if occupying not over $\frac{1}{4}$ cross section and if suitable for nailing throughout; holes not over $\frac{1}{3}$ cross section; knots without quality limit not over $\frac{2}{3}$ cross section; standard G manufacture; pitch, including worm-eaten pitch if suitable for nailing throughout, pitch pockets; pith; through shakes; through checks; medium splits; heavy stain; wane limited to $\frac{3}{4}$ thickness and width, except short wane dips allowed if not within first 8" at end and if not reducing overall thickness or width more than $\frac{3}{4}$ ", and in addition the wane dips in heavy dimension widths of 8" and up are allowed for $\frac{1}{6}$ length; warp.

STRUCTURAL LUMBER

(The working stress grades of Southern Pine structural lumber, as well as all of the other stress-rated grades under these rules, conform to American Lumber Standards, having been formulated in accordance with basic principles of strength grading as established by the Forest Products Laboratory, U. S. Department of Agriculture, Madison, Wisconsin. They conform also to ASTM Designation D 245. These grades are adequate to provide the ratings indicated, and lumber conforming to these rules requires no further grading to qualify for any of the ratings.)

239. The unit working stresses for structural lumber, and for other stress grades under these rules, are based on conditions of use and subject

to adjustments as specified in the footnotes of subjoined table. The grades of structural lumber and corresponding unit working stresses are as follows:

Grade	Para-graph No.	Extreme Fiber in Bending "f" and Tension Parallel to Grain "t"		Compression Across Grain "c ₁ "	Horizontal Shear "H"	Compression Parallel to Grain "c"	
		2" to 4"	5" Up			2" to 4"	5" Up
Dense Str. 86	278	2900	2400	455	150	2200	1800
Dense Str. 72	280	2350	2000	455	135	1800	1550
Dense Str. 65	282	2050	1800	455	120	1600	1400

MODULUS OF ELASTICITY, "E",... (All grades)... 1,760,000

- (1) The stress-rated grades under these rules are based on strength ratios of 86%, 72%, 65%, 58% and 50%. Since any strength under 100% represents the strength remaining in green lumber after adequate allowance is made for strength-reducing imperfections, the numbers like 86, 72, 65, 58 and 50 in the grade names are index figures for comparison with clear-wood strength of 100%. While the grade names are based on strength ratios applicable to green lumber, the working stress ratings include appropriate adjustments for seasoning, dry conditions of use, etc.
- (2) All stress-rated grades under these rules are established on a basis that permits cutting graded members to shorter lengths without impairment of stress ratings in the shorter pieces. In addition, the stresses apply to members used either flat or on edge.
- (3) Grade restrictions established under the 1963 Standard Grading Rules apply the entire length of each piece, and each piece therefore is suitable for use in continuous spans, over double spans or under concentrated loads without the necessity of regrading for special shear or other special stress requirements.
- (4) The allowable unit stresses for all stress-rated grades under these rules are for normal loading conditions and apply in all cases other than those for which special exceptions are to be made. Where a member is to be fully loaded to the maximum design stress for many years either continuously or cumulatively, working stresses 90% of those herein indicated should be used. The stresses may be modified on a similar basis for railroad bridges and other structures that involve unusually hazardous or severe service conditions.
- (5) The allowable unit stresses and adjustments thereof apply to lumber used under conditions continuously dry, as in most covered structures. They apply also to durable heart-wood lumber and to lumber pressure-impregnated by approved process and preservative under dry conditions of use, except if such lumber is in service under wet conditions of use, the same reductions as specified in the next following footnote shall be made for the wet conditions of use.

- (6) If lumber is in service under wet conditions of use or where the moisture content is at or above the fiber saturation point, as when continuously submerged, (a) the allowable unit stresses for extreme fiber in bending, tension parallel to grain and horizontal shear shall be limited in all thicknesses to the stresses indicated for thicknesses of 5" and up, (b) the allowable unit stresses for compression parallel to grain shall be limited in all thicknesses to the stresses indicated for thicknesses of 5" and up reduced by 10% and (c) the allowable unit stresses for compression perpendicular to the grain shall be reduced one-third, and for modulus of elasticity shall be reduced one-eleventh.
- (7) These grades apply to lumber of 2" thickness and over. For additional stress-rated grades, see paragraphs 201, 230, 240, 316 and 317.

240. The grades of 2" structural lumber when seasoned to a moisture content not in excess of 15% and otherwise conforming to requirements of paragraph 202 are entitled to strength ratings higher than those assigned to the same grades at 19% maximum moisture content. These higher ratings, based on conditions of use and subject to adjustments as specified in table footnotes of paragraph 239 are as follows:

Grade (2" Thick)	Extreme Fiber in Bending "f" and Tension Parallel to Grain "t"	Com- pression Across Grain "c _⊥ "	Hori- zontal Shear "H"	Com- pression Parallel to Grain "c"
Dense Str. 86 KD ¹ .	3000	455	165	2250
Dense Str. 72 KD ¹	2500	455	150	1950
Dense Str. 65 KD ¹	2250	455	135	1800

MODULUS OF ELASTICITY, "E",... (All grades)... 1,760,000

¹See paragraph 220 for procedure in specifying and designating both air-dried and kiln-dried dimension with moisture content of 15% or less in order that higher strength ratings may be applicable.

241. Structural lumber is identified by use of word "structural" in grade name and shall contain only sound wood, free from any form of decay.

242. Lengths unless otherwise specified shall be supplied in 10' to 16' or 18' or 20'.

243. Rough structural lumber shall be well manufactured and sawn full to nominal dimensions when green except not over 20% of pieces in any shipment may be scant limited to 1/16"

from variation in sawing, and when dry shall be not scant of nominal sizes more than $1/4$ " on nominal dimensions of 7" and less, and $3/8$ " if over 7". Such lumber, dry or green, if in excess of nominal dimensions, may be dressed to nominal dimensions, and when so dressed shall be considered as rough lumber.

244. **Standard dressed structural lumber** sizes of 2" thickness and over, dry or green S1E and S1S to S4S, are $3/8$ " scant of nominal for thicknesses and widths under 8", and $1/2$ " scant for 8" and up, and such standard sizes are to be minimum when measured green. Such lumber requires standard E manufacture but skip scantness limited to $1/32$ ".

245. **The moisture content** for all grades of 2" structural lumber, in widths 12" and less and in lengths 24' and less, shall not exceed 19%, but if specified, represented or grade marked as kiln dried, the limit shall be 15%. The limits for other sizes, if desired, should be specified.

246. The structural grades permit very light warp. Compression wood is prohibited if in readily identifiable and damaging form.

247. **Medium stain** is permitted in 2" thickness, and same restrictions apply also to thicknesses over 2" if specified to be dry, but stain restrictions for any structural lumber allowed to be unseasoned or partially seasoned should be specified if desired.

248. **Wane** is measured across narrow or wide face on which it appears and at point of most wane, and limitations apply to rough and dressed alike, except greater wane is allowed in rough in keeping with any oversize. (Wane limitations from highest grade to lowest are on a basis that is $1/16$, $1/12$ and $1/8$ nominal width of face.)

249. **Knots** in structural lumber shall be sound and tight but may be encased, and are subject to provisions of paragraph 86 where applicable. Through knot holes or through holes from other causes are not allowed, but surface pits or cavities from broken knots and similar causes not larger than allowable knots and not over $1/2$ " deep are allowed if not involving unsoundness. Pith knots are allowed in pithless pieces and in pieces containing pith if not over 4" thick, but

are not allowed in boxed pith pieces over 4" thick. Knots crossing corners of pithless pieces and not extending beyond area of permissible wane are not considered. (a) Knots in structural lumber of 2" and 3" nominal thicknesses, or up to but not including 4", are measured by their average dimensions, except face knots extending across full width of a face in side-cut pieces and corner knots are measured between lines parallel to length of piece on face most nearly showing true diameter. A knot other than a corner or face knot that appears on both narrow and wide faces of a side-cut piece is measured only on wide face. The size of a spike knot is average of its length and greatest width. (b) Knots in structural lumber of 4" or more in nominal thickness are measured along centers of wide faces by whatever dimension best represents diameter of branch, usually minimum diameter as seen on sawn face, and are measured on narrow faces and edges of wide faces as distance between lines enclosing knot and parallel to edges of pieces.

250. **Restrictions on shakes, checks and splits** apply according to whether lumber is seasoned or unseasoned. The grading of any combination of these imperfections is based on judgment of grader or inspector as to probable effects of seasoning or loading in service on the combination, and if two checks in opposite faces or any other combination occur in same horizontal shear plane, sum of sizes in combination are to be restricted to allowable size of shake, but if such a combination is not additive in this way, only largest single characteristic is considered. (a) **Shakes** are measured at and over entire ends of pieces, but must be wholly enclosed within end without extending to a surface at or away from end, and the size, which is determined by thickness of piece, is distance between lines enclosing shake and parallel to wide faces of piece. (b) **Checks** are limited across full surface of wide faces and restricted by same size limits as specified for shakes, but size is determined by average depth of penetration into piece measured from and perpendicular to wide surface. This measurement usually is made over a distance from end equal to three times face width, but deepest average

penetration over same length governs regardless of location in length. (c) **Splits and through checks** are not permitted away from ends of pieces, but at the ends of pieces 2" thick are limited in average length to three times size of largest single knot permitted, and to three times permissible size of shake if over 2" thick.

251. DENSE STRUCTURAL 86

Stress-rated as per paragraph 239, limited to slope of grain of 1" in 18", and restricted further as follows:

Nominal Width of Face	Knot Size at the Edge of Wide Face	Knot Size on the Narrow Face and Along the Center of Wide Face	Shakes and Checks		Wane at Any Point on Any Face
			Dry	Green	
2"	$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{1}{8}$ "
3"	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{3}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{16}$ "
4"	$\frac{5}{16}$ "	$\frac{1}{2}$ "	1"	$\frac{5}{8}$ "	$\frac{1}{4}$ "
5"	$\frac{3}{8}$ "	$\frac{5}{8}$ "	$1\frac{1}{4}$ "	$\frac{3}{4}$ "	$\frac{1}{16}$ "
6"	$\frac{1}{2}$ "	$\frac{3}{4}$ "	$1\frac{1}{2}$ "	$\frac{7}{8}$ "	$\frac{3}{8}$ "
8"	$\frac{5}{8}$ "	1"	2"	$1\frac{1}{4}$ "	$\frac{1}{2}$ "
10"	$\frac{3}{4}$ "	$1\frac{1}{8}$ "	$2\frac{1}{2}$ "	$1\frac{1}{2}$ "	$\frac{5}{8}$ "
12"	$\frac{7}{8}$ "	$1\frac{1}{16}$ "	3"	$1\frac{7}{8}$ "	$\frac{3}{4}$ "
14"	1"	$1\frac{1}{4}$ "	$3\frac{1}{2}$ "	$2\frac{1}{8}$ "	$\frac{7}{8}$ "
16"	1"	$1\frac{3}{8}$ "	4"	$2\frac{1}{2}$ "	1"
18"	$1\frac{1}{8}$ "	$1\frac{1}{2}$ "	$4\frac{1}{2}$ "	$2\frac{7}{8}$ "	$1\frac{1}{8}$ "
20"	$1\frac{1}{8}$ "	$1\frac{5}{8}$ "	5"	$3\frac{1}{4}$ "	$1\frac{1}{4}$ "

252. Longleaf Structural 86 conforms in all respects to Dense Structural 86, except longleaf required.

253. DENSE STRUCTURAL 72

Stress-rated as per paragraph 239, limited to slope of grain of 1" in 14", and restricted further as follows:

Nominal Width of Face	Knot Size at the Edge of Wide Face	Knot Size on the Narrow Face and Along the Center of Wide Face	Shakes and Checks		Wane at Any Point on Any Face
			Dry	Green	
2"	$\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{5}{16}$ "
3"	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$\frac{5}{8}$ "	$\frac{1}{4}$ "
4"	$\frac{5}{8}$ "	1"	$1\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{16}$ "
5"	$\frac{3}{4}$ "	$1\frac{1}{4}$ "	$1\frac{5}{8}$ "	$1\frac{1}{8}$ "	$\frac{1}{32}$ "
6"	1"	$1\frac{1}{2}$ "	$1\frac{1}{8}$ "	$1\frac{3}{8}$ "	$\frac{1}{2}$ "
8"	$1\frac{1}{4}$ "	2"	$2\frac{1}{2}$ "	$1\frac{7}{8}$ "	$\frac{5}{8}$ "
10"	$1\frac{1}{2}$ "	$2\frac{1}{4}$ "	3"	$2\frac{3}{8}$ "	$\frac{13}{16}$ "
12"	$1\frac{3}{4}$ "	$2\frac{3}{8}$ "	$3\frac{3}{4}$ "	$2\frac{3}{4}$ "	1"
14"	2"	$2\frac{1}{2}$ "	$4\frac{1}{2}$ "	$3\frac{1}{4}$ "	$1\frac{1}{16}$ "
16"	2"	$2\frac{3}{4}$ "	5"	$3\frac{3}{4}$ "	$1\frac{3}{8}$ "
18"	$2\frac{1}{4}$ "	3"	$5\frac{1}{2}$ "	4"	$1\frac{1}{2}$ "
20"	$2\frac{1}{4}$ "	$3\frac{1}{4}$ "	6"	$4\frac{3}{4}$ "	$1\frac{5}{8}$ "

254. Longleaf Structural 72 conforms in all respects to Dense Structural 72, except longleaf required.

255. DENSE STRUCTURAL 65

Stress-rated as per paragraph 239, limited to slope of grain of 1" in 12", and restricted further as follows:

Nominal Width of Face	Knot Size at the Edge of Wide Face	Knot Size on the Narrow Face and Along the Center of Wide Face	Shakes and Checks		Wane at Any Point on Any Face
			Dry	Green	
2"	$\frac{5}{16}$ "	$\frac{5}{8}$ "	$\frac{5}{8}$ "	$\frac{5}{8}$ "	$\frac{1}{4}$ "
3"	$\frac{5}{8}$ "	$1\frac{1}{16}$ "	$1\frac{1}{4}$ "	1"	$\frac{3}{8}$ "
4"	$1\frac{1}{8}$ "	$1\frac{1}{4}$ "	$1\frac{5}{8}$ "	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "
5"	$1\frac{1}{16}$ "	$1\frac{9}{16}$ "	2"	$1\frac{5}{8}$ "	$\frac{5}{8}$ "
6"	$1\frac{1}{4}$ "	$1\frac{7}{8}$ "	$2\frac{3}{8}$ "	$1\frac{7}{8}$ "	$\frac{3}{4}$ "
8"	$1\frac{9}{16}$ "	$2\frac{1}{2}$ "	$3\frac{1}{8}$ "	$2\frac{5}{8}$ "	1"
10"	$1\frac{7}{8}$ "	$2\frac{13}{16}$ "	4"	$3\frac{1}{4}$ "	$1\frac{1}{4}$ "
12"	$2\frac{3}{16}$ "	$2\frac{21}{32}$ "	$4\frac{3}{4}$ "	$3\frac{3}{4}$ "	$1\frac{1}{2}$ "
14"	$2\frac{1}{2}$ "	$3\frac{1}{8}$ "	$5\frac{1}{2}$ "	$4\frac{1}{2}$ "	$1\frac{3}{4}$ "
16"	$2\frac{1}{2}$ "	$3\frac{7}{16}$ "	$6\frac{1}{4}$ "	5"	2"
18"	$2\frac{13}{16}$ "	$3\frac{3}{4}$ "	7"	$5\frac{1}{2}$ "	$2\frac{1}{4}$ "
20"	$2\frac{13}{16}$ "	$4\frac{1}{16}$ "	$7\frac{3}{4}$ "	$6\frac{1}{4}$ "	$2\frac{1}{2}$ "

256. Longleaf Structural 65 conforms in all respects to Dense Structural 65 except longleaf required.

257. Dense Structural 58 if specified after effective date of these rules, shall be designated and graded as No. 1 Dense if 2" thick and as No. 1 Dense SR if over 2". (a) Dense No. 1 Structural shall be designated and graded as No. 1 Dense if 2" thick and as No. 1 Dense SR if over 2". (b) Dense Structural SE&S shall be designated and graded as Dense Structural 65. (c) Dense Structural shall be designated and graded as Dense Structural 72. (d) Dense Select Structural shall be designated and graded as Dense Structural 86.

258. Longleaf Structural 58, if specified after effective date of these rules, shall be designated and graded as No. 1 Longleaf if 2" thick and as No. 1 Longleaf SR if over 2". (a) No. 1 Structural Longleaf shall be designated and graded as No. 1 Longleaf. (b) Structural SE&S Longleaf shall be designated and graded as Longleaf Structural 65.

259. **Merchantable Structural Longleaf** shall be graded by requirements for Longleaf Structural 65, and in addition shall show some heart entire length on one face if less than 9" wide, and if 9" or wider shall show some heart entire length on both faces or may show two-thirds heart on one face if some heart shows entire length on opposite face.

260. **Prime Structural Longleaf** shall be graded by requirements for Longleaf Structural 72, and in addition shall show one wide heart face if under 5" thick and under 8" wide, and two-thirds heart on both wide faces if under 5" thick and 8" or wider, and shall show two-thirds heart on wide faces and show some heart two-thirds of length on narrow faces if 5" or thicker, except if wide face exceeds narrow face by 3" or more, narrow face shall show some heart for one-half length, and square lumber shall show two-thirds heart on two faces and not less than one-half heart on other two faces.

261. **Select Structural Longleaf** shall be graded by requirements for Longleaf Structural 86, and in addition shall show not less than 85% heart, girth measurement, at every point in length.

SECTION IV

Factory and Industrial Grades Ship Decking, Barge and Ship Planking Railroad Freight-Car Lumber

FACTORY FLOORING AND DECKING HEAVY ROOFING AND HEAVY SHIPLAP SPECIAL DT&G ROOF DECKING

(Experience as well as Laboratory tests bear out the fact that Southern Pine's hardness gives assurance of long-lasting satisfaction under heavy wear. Southern Pine, therefore, is particularly suitable for use in places where the going is tough. Its history of performance in boardwalks, railroad platforms and freight-car decking, as well as in heavy duty flooring in warehouses and factories, is unrivaled. In addition to wearing well under severe service conditions, Southern Pine does not splinter very readily and this offers another safeguard against damage.)

301. The grades are Dense Standard Factory, No. 1 Factory and No. 2 Factory, with variations as to density, longleaf and heartwood. (Where No. 1 is specified without using "Factory" in grade designation, grading shall be as No. 1 dimension or No. 1 SR heavy dimension, as case may be.)

302. Dressed sizes shall be per paragraphs 44 to 46, except worked sizes are as follows:

THICKNESS		WIDTH			
Nominal	Dressed	Nominal	Dressed		
			D & M	Shiplapped	For Splines
2"	1 $\frac{5}{8}$ "	4"	3 $\frac{1}{8}$ "	3"	3 $\frac{1}{2}$ "
2 $\frac{1}{2}$ "	2 $\frac{1}{8}$ "	6"	5 $\frac{1}{8}$ "	5"	5 $\frac{1}{2}$ "
3"	2 $\frac{5}{8}$ "	8"	7"	7"	7 $\frac{1}{2}$ "
4"	3 $\frac{5}{8}$ "	10"	9"	9"	9 $\frac{1}{2}$ "
5"	4 $\frac{5}{8}$ "	12"	11"	11"	11 $\frac{1}{2}$ "

(See Drawings on Pages 143 to 150.)

303. **Lengths** for Dense Standard Factory and No. 1 Factory shall be same as for No. 1 per paragraph 51, and for No. 2 Factory as for No. 2.

304. **The moisture content** for 2" thickness, in widths 12" and less and lengths 24' and less, shall not exceed 19%, but if specified, represented or grade marked as kiln-dried, the limit shall be 15%. The limits for other sizes, if desired, should be specified. (It is recommended that a maximum limit of 15% moisture content be specified for all thicknesses of roof decking.)

305. **Standard working (S2S&SM)** for 2" and 2-1/2" T&G and D&M shall be with tongue 7/16" thick by 3/8" wide, and for 3" and over shall be with tongue 3/4" thick by 3/8" wide; groove shall be 1/16" wider than tongue thickness, and 1/16" deeper than tongue width; lower lip shall be recessed 1/16"; and tongue and groove shall be located 1/4 nominal thickness from bottom of piece. (See pages 144 to 146; center-matched working (S2S&CM) on page 143.) (a) **Bead working**, if required, shall be EB1S, unless otherwise specified, with bead on grading face, worked 1/2" wide by 1/4" thick, and depressed 1/32" per cut on page 142. (b) **"V" working**, if required, shall be EV1S, unless otherwise specified, with V on grading face, worked by a bevel 3/16" deep by 1/4" wide on both edges; center V, if required, shall be 3/16" deep by 1/2" wide. (c) Occasional pieces with 5/16" tongue permitted in all grades.

306. **Heavy Shiplap working** shall be S2S, unless otherwise specified, and lap shall be 1/2" wide by 1/2 finished thickness. (See page 150.) (a) Occasional pieces with 3/8" lap on one edge permitted in all grades.

307. **Grooved-for-splines working** shall be S2S&CG2E, unless otherwise specified, with

grooves on nominal thicknesses under 3" centered on edges to correspond in sizes with grooves in same thicknesses of T&G working. In thicknesses of 3" and over, 3/4" by 3/4" grooves shall be centered on edges. (a) **Standard splines** shall be rounded on 1/8" radius on the four corners; shall be 7/16" thick by 3/4" wide for 2" and 2-1/2"; and shall be 11/16" by 1-5/16" for 3" and thicker. (See pages 147 to 149.)

308. DENSE STANDARD FACTORY

A stress-rated grade as indicated for 58% strength ratio grade for dense per paragraph 316, and must conform in all respects on face side to requirements for No. 1 Dense dimension if 2" thick, or for No. 1 Dense SR if over 2" and to additional requirements as follows: firm red heart limited to 15% of face area; pitch, decayed and hollow knots not permitted; knots limited in size on face to 1/4 nominal width; pith limited to 1/6 length; wane on face not allowed; reverse side not below No. 1 Factory. (a) **Standard Longleaf Factory** conforms to all requirements of paragraphs 7 and 308.

309. **Select Merchantable Longleaf Factory** conforms to all requirements of Standard Longleaf Factory and in addition must show 2/3 heart surface entire length of piece on one side and some heart 2/3 length on opposite side. The side showing most heart is face side if worked S2S&CM or S2S&SL or S2S&CG.

310. **Select Heart Longleaf Factory** and **Select Heart Face Factory** conform to all requirements of Standard Longleaf Factory and in addition the former is free from sapwood throughout each piece and the latter is free from sapwood on face side.

311. NO. 1 FACTORY

A stress-rated grade as indicated for 50% strength ratio grade per paragraph 316, and must conform in all respects on face side to requirements for No. 1 dimension if 2" thick or No. 1 SR if over 2", and to additional requirements as follows: decayed and hollow knots not permitted; pith knots allowed only if pith opening does not extend through piece; pith limited to 1/6 length; wane limited to 1/4" deep, 1/2" wide and 1/6 length of piece; reverse side not lower than No. 2 Factory, but wane may not extend into tongue or groove if D&M or into 1/2 thickness of lap if shiplapped, except may extend into groove or through lap or for 1/2 thickness of tongue for a length of 10" provided wane width and length decrease in proportion to depth increase.

312. No. 1 Dense Factory conforms to all requirements of paragraphs 6 and 311. (a) No. 1 Longleaf Factory conforms to all requirements of paragraphs 7 and 311.

313. No. 2 Factory is a stress-rated grade as indicated for 50% strength ratio grade per paragraph 316, and must conform in all respects on face and reverse side to requirements for No. 2 dimension if 2" thick or No. 2 SR if over 2".

314. No. 2 Dense Factory conforms to all requirements of paragraphs 6 and 313. (a) No. 2 Longleaf Factory conforms to all requirements of paragraphs 7 and 313.

315. Special Roof Decking grades, with double tongue and groove, in 3x6 and 4x6 sizes, and patterns of standard workings are in a separate supplement to these rules entitled "SPIB Standards for Southern Pine Roof Decking." (Available without charge upon request.)

INDUSTRIAL LUMBER

(Because of its versatility and inherent qualities, Southern Pine is the preferred wood for a wide variety of industrial uses. In many items, the test is ability to withstand hard usage. In others, it is resistance to abrasive action or to mechanical wear under vibration, or ability to absorb severe shock without rupture. Again, it may be resistance to action of acid, or ability to hold nails or screws. The straight dense grain that characterizes this wood, together with its superiority in mechanical properties, cause Southern Pine to top the list of woods suitable for industrial uses.)

316. The grades of industrial lumber and their working stresses, based on conditions of use and subject to adjustments as specified in footnotes of paragraph 239, are as follows:

Grade	Extreme Fiber in Bending "F" and Tension Parallel To Grain "t"		Compression Across Grain "c _L "	Horizontal Shear "H"	Compression Parallel To Grain "c"	
	1" to 4"	5" & up	1" up	1" up	1" to 4"	5" & up
Industrial 86. Dense Ind. 86	2500 2900	2100 2400	390 455	150 150	1900 2200	1550 1800
Industrial 72. Dense Ind. 72	2000 2350	1750 2000	390 455	135 135	1550 1800	1350 1550
Industrial 65. Dense Ind. 65	1750 2050	1550 1800	390 455	120 120	1350 1600	1200 1400
Industrial 58. Dense Ind. 58	1500 1750	1400 1600	390 455	105 105	1250 1450	1100 1300
Industrial 50. Dense Ind. 50	1200 1400	1200 1400	390 455	105 105	900 1050	900 1050

MODULUS OF ELASTICITY, "E",... (All grades)...1,760,000

317. The grades of industrial lumber 2" thick and less, when seasoned to a moisture content not in excess of 15% and otherwise conforming to requirements of paragraph 202, are entitled to strength ratings higher than those assigned to the same grades at 19% maximum moisture

content. These higher ratings, based on conditions of use and subject to adjustments as specified in footnotes of paragraph 239, are as follows:

Grade (2" Thick & Less)	Extreme Fiber in Bending "F" and Tension Parallel to Grain "t"	Com- pres- sion Across Grain "c _⊥ "	Hori- zontal Shear "H"	Com- pres- sion Parallel to Grain "c"
Industrial 86 KD ¹ ...	2600	390	165	1950
Dense Ind. 86 KD ¹ ...	3000	455	165	2250
Industrial 72 KD ¹ ...	2200	390	150	1650
Dense Ind. 72 KD ¹ ...	2500	455	150	1950
Industrial 65 KD ¹ ...	2000	390	135	1550
Dense Ind. 65 KD ¹ ...	2250	455	135	1800
Industrial 58 KD ¹ ...	1750	390	120	1400
Dense Ind. 58 KD ¹ ...	2050	455	120	1650
Industrial 50 KD ¹ ...	1500	390	120	1100
Dense Ind. 50 KD ¹ ...	1750	455	120	1300

MODULUS OF ELASTICITY, "E",... (All grades)... 1,760,000

¹See paragraph 203 for procedure in specifying and designating both air-dried and kiln-dried lumber 2" thick and less with moisture content of 15% or less in order that higher strength ratings may be applicable.

318. Industrial grades, although intended primarily for application to standard thicknesses of 1" to 4" in all standard widths, are established on a basis that permits application to other thicknesses if specified. Standard sizes and other conditions shall be same as for corresponding regular grades except as otherwise specified.

(a) Industrial stress-rated lumber is required for some uses in which a better quality is needed on one face than on opposite face, and combinations of strength ratio grades serve a useful purpose in these situations, but the lower ratio in each such combination determines stress ratings. (b) Dense and longleaf are additional optional requirements that may be specified for any of the industrial grades if desired.

319. Lengths, unless otherwise specified, shall be on a basis of corresponding face grades per paragraph 51.

320. Moisture content limits for industrial lumber of 2" thickness and less shall be on a

basis of corresponding face grades in accordance with paragraph 56 or paragraph 57, as case may be. The limits for thicknesses over 2", if desired, should be specified according to seasoning required.

321. INDUSTRIAL 86

A stress-rated grade as per paragraph 316. Thicknesses of 4" and less must conform in all respects on face and reverse side to face side requirements for B&B finish, and to additional requirements for both sides as follows: must be medium grain; slope of grain limited to 1" in 18"; knots as permitted in widths under 6" may occupy not more than 1/12 cross-section; splits are not permitted; surface checks as permitted may be not deeper than 1/6 thickness. Thicknesses over 4" must conform in all respects to requirements for Dense Structural 86 except medium grain allowed.

322. Industrial 86-72 conforms in all respects on face side to Industrial 86, and on reverse side to Industrial 72.

323. Industrial 86-65 conforms in all respects on face side to Industrial 86, and on reverse side to Industrial 65.

324. Industrial 86-58 conforms in all respects on face side to Industrial 86, and on reverse side to Industrial 58.

325. Industrial 86-50 conforms in all respects on face side to Industrial 86, and on reverse side to Industrial 50.

326. INDUSTRIAL 72

A stress-rated grade as per paragraph 316. Thicknesses of 4" and less must conform in all respects on face and reverse side to face side requirements for C finish, and to additional requirements for both sides as follows: must be medium grain; slope of grain limited to 1" in 14"; knots as permitted may occupy not more than 1/8 cross-section; splits and through checks are not permitted; surface checks and shakes as permitted may not be deeper than 1/4 thickness; wane limited to 1/8" wide and 1/8" deep. Thicknesses over 4" must conform in all

respects to requirements for Dense Structural 72, except medium grain allowed.

327. Industrial 72-65 conforms in all respects on face side to Industrial 72, and on reverse side to Industrial 65.

328. Industrial 72-58 conforms in all respects on face side to Industrial 72, and on reverse side to Industrial 58.

329. Industrial 72-50 conforms in all respects on face side to Industrial 72, and on reverse side to Industrial 50.

330. INDUSTRIAL 65

A stress-rated grade as per paragraph 316. Thicknesses of 4" and less must conform in all respects on face and reverse side to face side requirements for D finish, and to additional requirements for both sides as follows: must be medium grain; slope of grain limited to 1" in 12"; pith knots with through openings not permitted; knots as permitted may occupy not more than 1/5 cross-section; scant width is not allowed; splits and through checks are not permitted; surface checks and shakes as permitted may be not deeper than 1/3 thickness; wane limited to 1/4" wide and 1/4" deep. Thicknesses over 4" must conform in all respects to requirements for Dense Structural 65, except medium grain allowed.

331. Industrial 65-58 conforms in all respects on face side to Industrial 65, and on reverse side to Industrial 58.

332. Industrial 65-50 conforms in all respects on face side to Industrial 65, and on reverse side to Industrial 50.

333. INDUSTRIAL 58

A stress-rated grade as per paragraph 316. Thicknesses under 2" must conform in all respects on face and reverse side to face side requirements for No. 1 boards, and to additional requirements for both sides as follows: must be medium grain; slope of grain limited to 1" in 10"; pith knots with through openings not permitted; knots as permitted may occupy not more than 1/4 cross-section; must be free of

heavy pitch and worm-eaten pitch; splits and through checks are not permitted; surface checks and shakes as permitted may be not deeper than $\frac{1}{3}$ thickness; wane limited to $\frac{1}{4}$ " wide and $\frac{1}{4}$ " deep. Thicknesses of 2" and over must conform in all respects to requirements for No. 1 or No. 1 SR, as case may be, and to additional requirements as follows: through holes and pith knots with through openings not permitted; decayed, fixed and hollow knots not permitted; standard D manufacture required; limited to medium pitch, medium pitch pockets and medium pitch streaks; must be free of splits, through checks and through shakes; wane limited to $\frac{1}{4}$ " wide and $\frac{1}{4}$ " deep.

334. Industrial 58-50 conforms in all respects on face side to Industrial 58, and on reverse side to Industrial 50.

335. INDUSTRIAL 50

A stress-rated grade as per paragraph 316. Thicknesses under 2" must conform in all respects on face and reverse side to face side requirements for No. 2 boards, and to additional requirements for both sides as follows: must be medium grain; slope of grain limited to 1" in 8"; no through openings to be in excess of $\frac{1}{4}$ "; fixed, hollow and loose knots not permitted; decayed knots containing serious surface pits or cavities not permitted, but knots evidencing advanced decay and not exceeding sizes specified for No. 1 boards are allowed if smooth across surface; knots may occupy not over $\frac{1}{3}$ cross-section at edges of wide faces and not over $\frac{1}{2}$ cross-section along center lines; standard D manufacture required; must be free of medium pitch, worm-eaten pitch, open pitch pockets, large pitch pockets and large pitch streaks; surface checks and shakes as permitted may be not deeper than $\frac{2}{5}$ thickness; very short splits permitted; medium stain limited to 25% of face; streaks of decay not permitted; wane limited to $\frac{1}{2}$ " wide and $\frac{1}{2}$ " deep. Thicknesses of 2" and over must conform in all respects to requirements for No. 2 or No. 2 SR, as case may be, and to additional requirements as follows: no through openings to be in excess of $\frac{1}{4}$ "; fixed, hollow and loose

knots not permitted; standard D manufacture required; must be free of medium pitch, worm-eaten pitch, through pitch pockets, large pitch pockets and large pitch streaks; medium stain limited to 25% of face; streaks of decay not permitted; wane limited to 1/2" wide and 1/2" deep.

SPECIAL INDUSTRIAL GRADES

(It is the objective of the Southern Pine industry to provide its trade with suitable grading standards for every possible need. Some of the grades recommended for particular uses are given in the following paragraphs. Other grades may be specified also for these purposes.)

336. Dense Industrial 72 crossarms (light) must conform to requirements of paragraphs 6 and 326.

337. Dense Structural 65 crossarms (heavy) must conform to requirements of paragraphs 6 and 255.

338. Industrial 86-72 ladder stock must conform to requirements of paragraph 322.

339. Industrial 72-65 ladder stock must conform to requirements of paragraph 327.

340. Industrial 86 pole stock for agricultural implements must conform to requirements of paragraph 321.

341. Dense Industrial 72 scaffold plank must conform to requirements of paragraphs 6 and 326.

342. Dense Structural 65 scaffold plank must conform to requirements of paragraph 255.

343. No. 1 Dense Stadium grade for outdoor seating shall be free on one wide face of each piece of pitch pockets, pitch streaks and medium pitch, and each piece shall conform in other respects to requirements for No. 1 Dense dimension. (It is recommended that orders for this quality specify "No. 1 Dense Stadium grade, paragraph 343." This will reduce the risk of confusing this quality with regular No. 1 Dense dimension.)

344. No. 1 Stadium grade for outdoor seating shall be free on one wide face of each piece of pitch pockets, pitch streaks and medium pitch, and each piece shall conform in other respects to requirements for No. 1 dimension. (Orders

should specify "No. 1 Stadium grade, paragraph 344".)

345. **Industrial 72-58 tank stock** (under 4" thick) must conform to requirements of paragraph 328.

346. **Industrial 58 tank stock** (4" thick and over) must conform to requirements of paragraph 333.

SHIP DECKING BARGE AND SHIP PLANKING

347. These grades of ship decking and planking are established for the purpose of providing lumber quality for Navy needs equivalent to the grades required heretofore under Military Specification MIL-P-2134 (Navy 39P12b).

348. **Ship decking** is required to be either Longleaf or Dense Southern Pine, as specified in contract or order.

349. **Ship planking** is required to be either Longleaf, Dense or Medium grain Southern Yellow Pine, as specified in the contract or order.

350. **Edge grain** is an additional optional quality to be specified for decking if extreme need for it exists but its use is discouraged otherwise. If edge grain is specified, square sizes (equal thickness and width) instead of rectangular sizes are preferable from a standpoint of facilitating production and availability. If edge grain is not specified in the contract or order, any angle of grain with the surface is allowed.

351. **Heartwood** is an additional optional quality to be specified for decking and planking if extreme need for it exists but its use is discouraged otherwise. In all cases, sapwood and other imperfections which can be removed in working the rough lumber to finished size are allowed. If pressure impregnation with preservatives is specified, at least 50% sapwood is required on each face, but otherwise and without contrary provision, either heartwood or sapwood or a mixture of both is allowed.

352. **Rough decking and planking** are required to be well manufactured in keeping with standard practice for the grades involved and uniformly sawn to full nominal dimensions specified in the contract or order. Finished decking

and planking require first-class workmanship in every respect.

353. **Lengths** are required to be supplied as specified in the contract or order, but specifying a linear average in excess of 15' should be avoided as much as possible. The use of 10' or longer with a linear average of 15' is recommended. Lengths in multiples of 1' are permitted.

354. **Moisture content** limits for 2" thickness and less shall be on a basis of corresponding face grades in accordance with paragraph 56 or 57, as the case may be, unless otherwise specified in the contract or order, but moisture content limit for other thicknesses, if desired, should be specified in the contract or order.

355. The stain restrictions apply at the time of delivery of decking and planking to the purchaser. If the purchase contract allows shipment of decking or planking at a moisture content in excess of 19%, it shall be the responsibility of the seller through anti-stain treatment or otherwise to safeguard the quality against excess stain until delivery is made, but protection of such lumber against stain after delivery is the responsibility of the buyer.

356. **Grade I Dense Ship Decking** is required to be dense, and slope of grain is limited to 1" in 18". The face side of all thicknesses is required to conform to the face side requirements for clear finish, paragraph 25, except in addition each piece admits: 1 small or very small pitch pocket, 6 small surface checks, light stain, and medium stain limited to 5% of area. The reverse side of all thicknesses is required to conform to the face side requirements for B&B finish except in addition each piece admits: sound and firm tight knots not to exceed 1" in diameter, small pitch pockets, and medium pitch streaks. Surface checks allowed on face and reverse side may be not deeper than 1/12 thickness at ends of pieces. Pith is not permitted on or within the body of the piece if edge-grain is specified but otherwise is allowed within the body of the piece provided it does not show on face or reverse side. Overall grade in other respects is limited the same as B&B finish. (Grade I Dense Ship Decking is established to provide a quality of ship decking

that is the same or substantially the same as Grade I Decking under Navy Specification 39P12b.)

357. **Grade I Longleaf Ship Decking** conforms in all respects to Grade I Dense Ship Decking, except longleaf is required.

358. **Grade II Dense Ship Decking** is required to be dense, and slope of grain is limited to 1" in 14". The face side of all thicknesses is required to conform to the face side requirements for B&B finish, except in addition each piece admits: 2 small pitch pockets, 6 medium surface checks, and light stain throughout. The reverse side of all thicknesses is required to conform to the face side requirements of C finish except in addition each piece admits: sound and firm tight medium knots, medium pitch, medium pitch pockets, and pith. Surface checks allowed on face and reverse side may be not deeper than 1/8 thickness at ends of pieces. Red heart, splits and through checks are not permitted. Pith is not limited within body of piece or on reverse side, but it is not permitted within the body of the piece if edge grain is specified. Over-all grade in other respects is limited the same as C finish. (Grade II Dense Ship Decking is established to provide a quality of ship decking that is the same or substantially the same as Grade II Decking under Navy Specification 39P12b.)

359. **Grade II Longleaf Ship Decking** conforms in all respects to Grade II Dense Ship Decking except longleaf is required.

360. **Grade I Dense Barge and Ship Planking** is stress-rated as indicated for 86% strength ratio grade for dense, paragraph 316, but no knots are allowed within 3/8" of the edge of any surface. Thicknesses of 2" and over are required to conform in all other respects to Dense Structural 86 except heavy stain is prohibited, and medium stain is limited to 15% of the area of the four surfaces of each piece. If thicknesses under 2" are specified, the grade is required to be Dense Industrial 86. (Grade I Dense Barge and Ship Planking is established to provide a quality of ship planking that is the same or substantially the same as Grade I Planking under Navy Specification 39P12b.)

361. **Grade I MG Barge and Ship Planking** is required to conform to all provisions applicable to Grade I Dense Barge and Ship Planking except medium grain is allowed.

362. **Grade I Longleaf Barge and Ship Planking** is required to conform to all provisions applicable to Grade I Dense Barge and Ship Planking except longleaf is required.

363. **Grade II Dense Barge and Ship Planking** is stress-rated as indicated for 72% strength ratio grade for dense, paragraph 316, but no knots are allowed within $3/8$ " of the edge of any surface. Thicknesses of 2" and over are required to conform in all other respects to Dense Structural 72 except heavy stain is prohibited, and medium stain is limited to 15% of the area of the four surfaces of each piece. If thicknesses under 2" are specified, the grade is required to be Dense Industrial 72. (Grade II Dense Barge and Ship Planking is established to provide a quality of ship planking that is the same or substantially the same as Grade II Planking under Navy Specification 39P12b.)

364. **Grade II MG Barge and Ship Planking** is required to conform to all provisions applicable to Grade II Dense Barge and Ship Planking except medium grain is allowed.

365. **Grade II Longleaf Barge and Ship Planking** is required to conform to all provisions applicable to Grade II Dense Barge and Ship Planking except longleaf is required.

366. **Grade III Dense Barge and Ship Planking** is stress-rated as indicated for 58% strength ratio grade for dense, paragraph 316, but no knots are allowed within $3/8$ " of the edge of any surface. Thicknesses of 2" and over are required to conform in all other respects to Dense Structural 58 except heavy stain is prohibited, and medium stain is limited to 15% of the area of the four surfaces of each piece. If thicknesses under 2" are specified, the grade is required to be Dense Industrial 58. (This grade provides a dependable quality of ship planking, although it is less restricted than the minimum quality under Navy Specification 39P12b.)

367. **Grade III MG Barge and Ship Planking** is required to conform to all provisions appli-

cable to Grade III Dense Barge and Ship Planking except medium grain is allowed.

368. Grade III Longleaf Barge and Ship Planking is required to conform to all provisions applicable to Grade III Dense Barge and Ship Planking except longleaf is required.

RAILROAD FREIGHT-CAR LUMBER

(These rules for railroad freight-car lumber are established for the purpose of attaining more efficient grading of such lumber. It is only occasionally that most mill graders are called upon to classify lumber of this kind, and too often they are placed in a position of having to do the job with new and unfamiliar rules. There is hardly time for them to become acquainted with the rules before the order is completed. Thus it is that graders who are very capable and efficient in applying the regular rules often are much less proficient on these special items. As a grader will acquire ability to satisfactorily apply a new rule much faster if it is described in a way that establishes a definite relationship with some other known rule, this plan has been followed as far as possible in the formulation of these rules for railroad freight-car lumber.)

369. In establishing these rules, the exacting nature of end-use requirements has been recognized, and suitability for the particular use intended shall be considered in applying them. Specific provisions take precedence and are to be applied without deviation, but standard sizes and other requirements shall be the same as for the corresponding regular grades except as otherwise specified.

370. The grading of car sills and framing as described in paragraphs 391, 392, 393, 394 and 395 is a question of strength and uniformity of size, with appearance a secondary consideration. Imperfections will be admitted in the various grades primarily in accordance with their effect upon the strength of the piece.

371. Medium grain, dense and longleaf are additional optional requirements that may be specified for any of the grades of freight-car lumber if desired.

372. The lengths of car lumber usually are specified in the contract of purchase and sale, and such specifications shall govern, but in the absence of specific length provisions, lengths are required as follows: (a) Sheathing, 8, 9, 10 and 12 feet, or multiples. (b) Lining, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 20 and 21 feet. (c) Roofing, 5 feet or multiples. (d) Flooring or decking, 9, 9-1/2 and 10 feet, or multiples. (e) Other items, 8, 9, 10, 11, 12, 14, 16, 18 and 20 feet, or as ordered. When such lumber is not desired in multiple lengths, order should so specify.

373. The moisture content for car lumber shall be as follows: (a) 10% maximum for finish, fascia, lining, roofing, vertical sheathing and other items of 1" nominal thickness and less; (b) 12% maximum for lining over 1" thick and horizontal sheathing; (c) 15% maximum for decking, floor boards, marking boards, placard boards, running boards, step boards and other items in Grading Groups I to VI. (These limits apply in the absence of contrary provision but it is recommended that the maximum limit for each item be specified in each purchase order.) (d) Moisture content requirements for items in Grading Groups VII to X if desired should be specified.

374. Standard patterns of AAR car lumber are illustrated by detailed drawings on pages 152 to 155.

375. The tongue may be scant in occasional pieces of D&M car lumber of any grade, but such scantness is limited to 1/16". Buyer specifications may require D&M car lumber to be without scantness in the tongues, if desired, but otherwise the scantness is allowed.

376. Warp in its various forms is permitted in the grades of car lumber according to the same restrictions applicable to the corresponding regular grades specified as the basis of face grades.

377. Car lumber under Grading Groups I to VI, which is graded from the face side, permits wane on the reverse side limited to 1/4 thickness, 1/6 width and 1/6 length, except it may not extend into the tongue or groove in D&M lumber or for more than one-half the thickness of lap in shiplapped lumber. Buyer specifications may re-

quire car lumber to be free of wane, if desired, but otherwise the wane is allowed.

378. The reverse side of car lumber as described in paragraphs 380, 382, 384, 386, and 388 is required to be free from streaks of decay or any other general decay, or from any imperfection which might prevent its use for the purpose intended, and admits sound, firm, encased, pith and decayed knots, if tight, limited in size in each case by maximum size face knot permitted, but decayed knots permitted only if reasonably smooth and moderately firm across surface, and pith knots limited by face side restrictions on through openings. Closed pitch pockets are permitted, but heavy pitch, worm-eaten pitch and large pitch streaks are not allowed. Pith is not restricted. Medium stain is permitted. Standard D manufacture is required.

GRADING GROUP I.—VERTICAL SHEATHING AND EXPOSED ROOFING

379. SPIB Select 51 conforms in all respects on the face side to the face side requirements of B&B Flooring, except for differences for the face side of each piece as follows:

- 2 medium surface checks allowed
- Slope of grain limited to 1" in 15"
- 2 sound and tight small knots allowed
- 2 small pitch pockets allowed
- Medium stain allowed
- Reverse side not lower than face side of SPIB Standard 52, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

380. SPIB Standard 52 conforms in all respects on the face side to the face side requirements of C Flooring, except for differences for the face side of each piece as follows:

- Firm red heart limited to 25% of face area regardless of grade otherwise
- Pin holes not permitted
- Slope of grain limited to 1" in 15"
- Knots over 3/4" must be intergrown
- Medium pitch not allowed
- Splits not permitted
- Medium stain allowed

Reverse side not lower than specified in paragraph 378, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

GRADING GROUP II.—HORIZONTAL SHEATHING AND STOCK CAR SLATS

381. SPIB Select 53 conforms in all respects on the face side to the face side requirements of B&B finish, except for differences for the face side of each piece as follows:

- 2 medium surface checks allowed
- Slope of grain limited to 1" in 15"

- 2 sound and tight small knots

- 1 sound intergrown medium knot

- 2 small closed pitch pockets

- 1 medium pitch streak

- Splits not permitted

- Medium stain allowed

Reverse side not lower than face side of SPIB Standard 54, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

382. SPIB Standard 54 conforms in all respects to the face side requirements of No. 1 boards, except for differences for the face side of each piece as follows:

- Through checks not allowed

- Slope of grain limited to 1" in 10"

- Firm red heart limited to 25% of face area

- Pin holes not permitted

- Sound and tight knots allowed up to 1/4 width of piece in rough, including pith knots if free of through hole

- Light pitch and medium pitch streaks permitted

- Slight shakes allowed

- Splits not permitted

- Medium stain allowed

Reverse side not lower than specified in paragraph 378, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

GRADING GROUP III.—FASCIA, FINISH AND PLACARD BOARDS

383. SPIB Select 55 conforms in all respects on the face side to the face side requirements of B&B finish, except for differences for the face side of each piece as follows:

- 2 medium surface checks allowed
- Slope of grain limited to 1" in 15"
- 4 pin holes per piece allowed
- 2 sound and tight small knots allowed
- 2 sound and intergrown medium knots allowed
- Light pitch permitted
- Barely perceptible shake permitted
- Medium stain allowed
- Wane allowed if not over either 1/4" wide, 1/4 thickness or 1/6 length
- Reverse side not lower than face side of SPIB Standard 56, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

384. SPIB Standard 56 conforms in all respects on the face side to the face side requirements of C finish, except for differences for the face side of each piece as follows:

- Through checks not allowed
- Slope of grain limited to 1" in 10"
- Firm red heart allowed on entire area
- Pin holes not limited
- Sound intergrown medium knots not limited in number or in any width
- Medium pitch permitted
- Medium closed pitch pockets permitted
- Medium stain allowed
- Wane allowed if not over either 1/2" wide, 1/4 thickness or 1/6 length
- Reverse side not lower than specified in paragraph 378, and wane on reverse side per paragraph 377. Moisture content per paragraph 373.

GRADING GROUP IV.—FLOORING, FLOOR BOARDS AND DOOR SILLS

385. SPIB Select 57 conforms in all respects on the face side to the face side requirements of B&B finish, except for differences for the face

side of each piece as follows:

1 medium surface check

Slope of grain limited to 1" in 15"

2 sound and tight small knots

1 sound intergrown medium knot

2 small closed pitch pockets

Splits not permitted

Reverse side not lower than face side of SPIB

Standard 58, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

386. SPIB Standard 58 conforms in all respects on the face side to the face side requirements of C finish, except for differences for the face side of each piece as follows:

Through checks not allowed

Slope of grain limited to 1" in 10"

Firm red heart not permitted

Pin holes not permitted

Knots limited in size to 1/4 rough width except firm knots limited to 1-1/2", and pith knots allowed only if no through opening

Medium pitch allowed and medium pitch pockets not limited to width or in number

Splits not permitted

Medium stain allowed

Wane allowed if not over either 1/4" wide, 1/4 thickness or 1/6 length

Reverse side not lower than specified in paragraph 378, and wane on reverse side per paragraph 377. Moisture content per paragraph 373.

GRADING GROUP V.—BATTENS, MARKING BOARDS, FACING, LINING AND INSIDE ROOFING

387. SPIB Select 59 conforms in all respects on the face side to the face side requirements of B&B finish, except for differences for the face side of each piece as follows:

2 medium surface checks allowed

Slope of grain limited to 1" in 15"

Firm red heart allowed on 15% of face area

Medium holes permitted

3 sound and tight pin knots are permitted

2 sound and tight small knots are permitted
1 sound intergrown medium knot permitted
1 medium closed pitch pocket allowed
1 medium pitch streak allowed
1 slight shake permitted
Medium stain allowed

Wane allowed if not over either $1/4''$ wide, $1/4$ thickness or $1/6$ length

Reverse side not lower than face side of SPIB Standard 60, except wane on reverse side per paragraph 377. Moisture content per paragraph 373.

388. SPIB Standard 60 conforms in all respects on the face side to the face side requirements of No. 1 boards, except for differences for the face side of each piece as follows:

Through checks not allowed

Slope of grain limited to $1''$ in $10''$

Medium holes allowed

Sound, pith and encased knots, if tight, limited in size to $1/2$ width of rough piece, and firm knots limited to $1-1/2''$

Only light pitch permitted and worm-eaten pitch not permitted

Pitch streaks limited to medium size

Medium stain allowed

Wane allowed if not over either $1/2''$ wide, $1/4$ thickness or $1/6$ length

Reverse side not lower than specified in paragraph 378, and wane on reverse side per paragraph 377. Moisture content per paragraph 373.

GRADING GROUP VI.—RUNNING BOARDS AND STEP BOARDS

389. SPIB Select 62 conforms in all respects on the face side to the face side requirements of B&B finish, except for differences for the face side of each piece as follows:

2 medium surface checks allowed

Firm red heart not permitted

Slope of grain limited to $1''$ in $15''$

Pin holes allowed if well scattered

2 sound and tight small knots permitted

Light pitch permitted

Splits not permitted

Medium stain allowed

Reverse side not lower than face side of SPIB Standard 58, except wane on reverse side per paragraph 377. When specified dressed one side, running and step boards are graded from the rough side. Moisture content per paragraph 373.

GRADING GROUP VII.—BAFFLE BOARDS, FILLERS, FURRING, NAILING POSTS AND NAILING SILLS

390. Square Edge and Sound is the recommended grade for baffle boards and non-structural framing, and provides a quality suitable for new equipment and the repair of used cars and tenders. (Moisture content restrictions if desired should be specified.)

GRADING GROUP VIII.—BEARERS, BOLSTERS, BUMPERS, DRAFT TIMBERS AND STRUCTURAL SILLS

391. Dense Structural 72 is the recommended grade for these uses in the construction of new equipment and in the repair of used equipment. (Moisture content restrictions if desired should be specified.)

GRADING GROUP IX.—CARLINS, PLANKS, PLATES, RIDGEPOLES AND PURLINS

392. Dense Structural 72 is the recommended grade for these uses in the construction of new equipment. (Moisture content restrictions if desired should be specified.)

393. No. 1 SR is the recommended grade for these uses in the repair of equipment. (Moisture content restrictions if desired should be specified.)

GRADING GROUP X.—BELTING, BRACES AND POSTS

394. Dense Structural 72 is the recommended grade for these uses in the construction of new equipment. (Moisture content restrictions if desired should be specified.)

395. No. 2 SR is the recommended grade for these uses in the repair of equipment. (Moisture content restrictions if desired should be specified.)

DEFINITIONS

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DEFINITIONS

401. A characteristic or cause for grade limitation as used herein is any imperfection occurring in or on lumber that detracts from its appearance, strength, durability or utility value. The most common characteristics and causes for grade limitation in Southern Pine lumber are included in the following definitions.

CHECKS

402. A check is a lengthwise grain separation, usually occurring through growth rings as a result of seasoning. (a) Surface checks occur on the surface of a piece. (b) Very small surface checks are not over $1/64$ " wide and not over 2" long. (c) Small surface checks are not over $1/32$ " wide and not over 4" long. (d) Medium surface checks are not over $1/32$ " wide and not over 10" long. (e) Large surface checks are not over $1/16$ " wide and not over 20" long. (f) Very large surface checks are over $1/16$ " wide or over 20" long. (g) End checks occur on the ends of a piece. (h) Through checks extend from a surface through the piece to opposite or adjoining surface, and have same size limitations as surface checks. (i) Heart checks start at pith and extend toward or to surface.

COMPRESSION WOOD

403. Compression wood is an abnormal growth or enlargement of a segment of annual ring or rings and most common on thick sides of lopsided logs. It is not often encountered in damaging form and requirements as to density and seasoning usually serve to control it in a satisfactory way for most grades, but it is prohibited in all stress grades and in other grades above D if present in readily identifiable and damaging form based on ordinary visual inspection.

DECAY

404. Decay is a disintegration of wood substance due to action of wood-destroying fungi and known also as dote and rot. (a) Firm red heart is a stage of incipient decay characterized

by a reddish color in heartwood, which does not unfit the wood for the majority of yard purposes. (b) **Incipient decay** is early stage of decay in which disintegration has not proceeded far enough to soften or otherwise change hardness of the wood perceptibly, and is usually accompanied by a slight discoloration or bleaching of the wood. (c) **Advanced (typical) decay** is older stage of decay in which disintegration is readily recognized because the wood is punky, soft, spongy, stringy, shaky, pitted or crumbly, and decided discoloration or bleaching of the rotted wood is often apparent. (d) **Unsound red heart** is a typical example of advanced decay. (e) **Heart-center decay** is a type of decay that existed in the living tree, and does not include decay that developed after tree was cut.

GRAIN DEVIATION

405. **Grain deviation** is extent to which the grain or fibers conform to or deviate from a course parallel with edges of surface and is measured as number of inches in length of piece in which the grain slopes an inch. (a) **Straight grain** permits a grain deviation not over 1" in 20" of length.

406. **Slope of grain** is a deviation in excess of 1" in 20" that is measured over a sufficient distance of length to determine general slope by disregarding slight local deviations. (a) **Very light slope** is limited to 1" in 18". (b) **Light slope** is limited to 1" in 14". (c) **Medium slope** is limited to 1" in 10". (d) **Heavy slope** is limited to 1" in 8". (e) **Very heavy slope** exceeds 1" in 8".

HOLES

407. **Holes** may extend partially or entirely through a piece and may be from any cause, but holes that extend only partially through may be designated also as **surface pits**. The average of maximum and minimum diameters of opening on surface determines size unless otherwise specified. (a) A **very small hole** is not over $1/32$ " in diameter. (b) A **pin (small) hole** is not over $1/16$ " in diameter. (c) A **medium hole** is not over $1/4$ "

in diameter. (d) A large hole is not over 1" in diameter. (e) A very large hole is over 1" in diameter.

KNOTS

408. A knot is a segment of a branch or limb that was embedded in the tree and has been cut through in process of lumber manufacture. The average of maximum and minimum diameters determines size unless otherwise specified.

409. Knots are classified as to size as: (a) A pin (very small) knot is not over 1/2" in diameter. (b) A small knot is over 1/2", but not over 3/4" in diameter. (c) A medium knot is over 3/4", but not over 1-1/2" in diameter. (d) A large knot is over 1-1/2", but not over 3" in diameter. (e) A very large knot is over 3" in diameter.

410. Knots as to form and occurrence are: (a) Branch knots are two or more divergent spike knots that taper toward pith at common point. (b) A knot cluster is comprised of two or more knots grouped together with fibers of wood deflected around entire unit, but a group of single knots is not a knot cluster. (c) A corner knot is located at intersection of adjacent faces. (d) A round knot is oval or circular. (e) A spike knot is sawed in a lengthwise direction.

411. Knots as to quality are: (a) A sound knot is solid across its face, as hard as surrounding wood, shows no indication of decay and may vary in color from natural color of wood to reddish brown or black. (b) A firm knot is solid across its face, but contains incipient decay. (c) A pith knot is sound in all respects, except contains a pith hole not over 1/4" in diameter. (d) A hollow knot is an apparently sound knot in all respects, except contains a hole over 1/4" in diameter, and a through opening in a hollow knot is considered the equivalent of a through hole of equal size. (e) A decayed knot is softer than surrounding wood and contains advanced decay.

412. Knots as to growth are: (a) An intergrown knot has its growth rings completely intergrown with those of surrounding wood. (b) A watertight knot has its growth rings com-

pletely intergrown with those of the surrounding wood on one surface and is sound on that surface. (c) An encased knot has growth rings not intergrown with those of surrounding wood and encasement may be partial or complete.

413. Knots as to stability are: (a) A tight knot is so fixed by growth or position that it will firmly retain its place in piece. (b) A fixed knot will hold its place in dry lumber under ordinary conditions, but can be moved under pressure, although not easily pushed out. (c) A loose knot is not held firmly in place by growth or position and cannot be relied upon to remain in place, and is considered the equivalent of a hole of equal size.

CLASSIFICATIONS OF MANUFACTURE

414. Classifications of standard manufacture provide a means for restricting the quality according to imperfections developed in manufacturing as hereinafter described. Standard A manufacture, standard B manufacture, standard C manufacture and standard D manufacture are the four primary classifications that are based on good appearance and finishing characteristics. Standard E manufacture, standard F manufacture, and standard G manufacture are the three secondary classifications that are based on general utility and serviceability in keeping with the quality in other respects.

415. Standard A manufacture admits: very light torn grain; very light machine burn; occasional very light chip marks; and very light knife marks.

416. Standard B manufacture admits: very light loosened grain; very light raised grain; light torn grain; light machine burn; very light chip marks; average of one light chip mark per lineal foot but not over two in any lineal foot; light knife marks; and very light mismatch.

417. Standard C manufacture admits: light loosened grain; light raised grain; medium torn grain; very light machine bite; medium machine burn; light machine gouge; very light machine offset; medium chip marks if well scattered; occasional heavy chip marks; medium knife marks;

very light mismatch; and slight face and edge skip.

418. **Standard D manufacture** admits: medium loosened grain; medium raised grain; heavy torn grain; light machine bite; heavy machine burn; medium machine gouge; light machine offset; heavy chip marks; heavy knife marks; light mismatch; skip dressing on not to exceed 10% of the face side in boards or of any face in dimension and timbers; scant thickness due to skips not to exceed $1/32''$; and HorM dressing on edges.

419. **Standard E manufacture** admits: heavy loosened grain; raised grain; torn grain; medium machine bite; machine burn; machine gouge; medium machine offset; chip marks; knife marks; very light wavy dressing; medium mismatch; skip dressing on not to exceed 25% of the face side in boards or of any face in dimension and timbers; scant thickness due to skips not to exceed $1/32''$; and skip dressing on edges if not over $1/16''$ scant in width, except occasional pieces may be scant from $1/16''$ to $1/8''$.

420. **Standard F manufacture** admits: loosened grain; raised grain; torn grain; heavy machine bite; machine burn; machine gouge; heavy machine offset; chip marks; knife marks; light wavy dressing; heavy mismatch; occasional skip dressing in boards without area limit, and not to exceed 50% of any face in dimension and timbers; scant thickness due to skips of not over $1/16''$, except may be as much as $1/8''$ scant for not more than 16" of length; and skip dressing on edges if not over $1/8''$ scant in width; except occasional pieces may be scant from $1/8''$ to $1/4''$.

421. **Standard G manufacture** admits: loosened grain; raised grain; torn grain; machine bite; machine burn; machine gouge; machine offset; chip marks; medium wavy dressing; mismatch; skip dressing without area limit; scant thickness due to skips not to exceed $1/4''$; and skip dressing on edges if not over $1/4''$ scant in width except occasional pieces may be scant from $1/4''$ to $3/8''$.

MANUFACTURING IMPERFECTIONS

422. **Chipped grain** is a chipping or breaking away of the grain of the wood in small particles

below the line of cut on dressed lumber. It should not be classed as torn grain, and as usually found is not damaging and is not to be considered unless present in excess of 25% of area.

423. **Loosened grain** is a grain separation or loosening between springwood and summerwood without displacement. (a) **Very light loosened grain** is not over $1/64$ " separation. (b) **Light loosened grain** is not over $1/16$ " separation. (c) **Medium loosened grain** is not over $1/4$ " separation. (d) **Heavy loosened grain** is not over 1" separation. (e) **Very heavy loosened grain** is over 1" separation.

424. **Raised grain** is an unevenness between springwood and summerwood on the surface of dressed lumber. Restrictions are intended to apply to the kind of raised grain due partly or wholly to imperfect manufacture, or to dressing lumber not properly conditioned and stabilized. (a) **Very light raised grain** is an unevenness somewhat less than $1/64$ ". (b) **Light raised grain** is not over $1/64$ ". (c) **Medium raised grain** is not over $1/32$ ". (d) **Heavy raised grain** is not over $1/16$ ". (e) **Very heavy raised grain** is over $1/16$ ".

425. **Torn grain** is a tearing of the grain of the wood on or from the surface of dressed lumber. (a) **Very light torn grain** is not over $1/64$ " deep. (b) **Light (slight) torn grain** is not over $1/32$ " deep. (c) **Medium torn grain** is not over $1/16$ " deep. (d) **Heavy torn grain** is not over $1/8$ " deep. (e) **Very heavy (deep) torn grain** is over $1/8$ " deep.

426. **Machine bite** is a depressed cut of the machine knives at the end of a piece. (a) **Very light machine bite** is not over $1/64$ " deep. (b) **Light machine bite** is not over $1/32$ " deep. (c) **Medium machine bite** is not over $1/16$ " deep. (d) **Heavy machine bite** is not over $1/8$ " deep. (e) **Very heavy machine bite** is over $1/8$ " deep.

427. **Machine burn** is a darkening or charring caused by machine knives. (a) **Very light machine burn** is the least serious form of discoloration which will not be objectionable for any use, and may include a brownish red area not larger than a pin knot and a black char area of small pea size. (b) **Light machine burn** is a darker

discoloration which may include a brownish red area not larger than two square inches and a black char area of pin knot size. (c) **Medium machine burn** is a more pronounced discoloration which may include a brownish red area limited to 1-1/2" wide by the width of the piece or equivalent if not full width and a black char area not over pin knot size. (d) **Heavy machine burn** permits a brownish red area limited to 3" wide by the width of the piece or equivalent if not full width and a black char area not larger than a 4" knot. (e) **Very heavy machine burn** is a darkening and charring without area limit.

428. **Machine gouge** is a groove cut by the machine below the desired line. (a) **Very light machine gouge** is somewhat less than 1/64" deep. (b) **Light machine gouge** is not over 1/64" deep. (c) **Medium machine gouge** is not over 1/32" deep. (d) **Heavy machine gouge** is not over 1/16" deep. (e) **Very heavy machine gouge** is over 1/16" deep.

429. **A machine offset** is a "pistol grip" or abrupt dressing variation in the edge surface which usually occurs near the end of the piece and without reducing the width or without changing the plane of the wide surface. (a) **Very light machine offset** is a variation not over 1/64". (b) **Light machine offset** is a variation not over 1/32". (c) **Medium machine offset** is a variation not over 1/16". (d) **Heavy machine offset** is a variation not over 1/8". (e) **Very heavy machine offset** is a variation over 1/8".

430. **Chip marks** are shallow depressions or indentations on or in the surface of dressed lumber caused by shavings or chips getting embedded in the surface during dressing. (a) **Very light chip marks** are somewhat less than 1/64" deep. (b) **Light chip marks** are not over 1/64" deep. (c) **Medium chip marks** are not over 1/32" deep. (d) **Heavy chip marks** are not over 1/16" deep. (e) **Very heavy chip marks** are over 1/16" deep.

431. **Knife marks** are the imprints or markings of the machine knives on the surface of dressed lumber. (a) **Very light knife marks** are visible only from a favorable angle and are perfectly smooth to the touch. (b) **Light knife marks** are readily visible but evidence no un-

evenness to the touch. (c) **Medium knife marks** evidence unevenness that is barely perceptible to the touch. (d) **Heavy knife marks** evidence perceptible unevenness that is somewhat less than $1/64''$ deep. (e) **Very heavy knife marks** evidence unevenness not over $1/64''$ deep.

432. **Wavy dressing** involves more uneven dressing than knife marks. (a) **Very light wavy dressing** is over $1/64''$ but not over $1/32''$ deep. (b) **Light wavy dressing** is not over $1/16''$ deep. (c) **Medium wavy dressing** is not over $1/8''$ deep. (d) **Heavy wavy dressing** is not over $1/4''$ deep. (e) **Very heavy wavy dressing** is over $1/4''$ deep.

433. **Mismatch** is an uneven fit in worked lumber when adjoining pieces do not meet tightly at all points of contact or when the surfaces of adjoining pieces are not in the same plane. (a) **Very light mismatch** is a barely evident trace of mismatch. (b) **Light mismatch** is not over $1/64''$. (c) **Medium mismatch** is not over $1/32''$. (d) **Heavy mismatch** is not over $1/16''$. (e) **Very heavy mismatch** is over $1/16''$.

434. **Skip** is an unsurfaced area on dressed lumber. (a) **Slight skip** is an area not surfaced smoothly and not longer than 6" if occupying full width, or equivalent area if less than full width. (b) **Hit and miss** is a series of surfaced areas with skips not over $1/16''$ deep between them. (c) **Hit or miss** is to skip or surface a piece for a part or all of its length provided it is nowhere over $1/16''$ scant.

435. **Variation in sawing** is a deviation from the line of cut. (a) **Slight variation** is not over $1/16''$ scant in 1" thickness or width, $1/8''$ in 2", $3/16''$ in 3" to 7", and $1/4''$ in 8" and up. (b) **Miscut lumber** has a greater variation than specified for slight variation.

PITCH

436. **Pitch** is an accumulation of resin in wood cells in a more or less irregular patch. (a) **Very light pitch** is barely evident presence of pitch. (b) **Light pitch** is lightly evident presence of pitch. (c) **Medium pitch** is a slightly more evident trace of pitch than light pitch. (d) **Heavy**

pitch is very evident presence of pitch showing by its color and consistency. (e) **Very heavy (massed) pitch** is a massed accumulation of solid pitch.

PITCH POCKETS

437. A **pitch pocket** is an opening between growth rings which usually contains or has contained resin or bark, or both. (a) A **very small pitch pocket** is not over $1/8''$ wide by $2''$ long. (b) A **small pitch pocket** is not over $1/8''$ wide by $4''$ long, or not over $1/4''$ wide by $2''$ long. (c) A **medium pitch pocket** is not over $1/8''$ wide by $8''$ long, or not over $3/8''$ wide by $4''$ long. (d) A **large pitch pocket** is not over 4 square inches in area. (e) A **very large pitch pocket** is over 4 square inches in area. (f) A **closed pitch pocket** has an opening on one surface only. (g) A **through pitch pocket** has an opening on opposite surfaces, and the through opening is considered same as a through hole of equal size.

PITCH STREAKS

438. A **pitch streak** is an accumulation of pitch in a more or less regular streak. (a) A **very small pitch streak** is not over $3/8''$ wide and not over $15''$ long. (b) A **small pitch streak** is not over $1/12$ width by $1/6$ length of surface. (c) A **medium pitch streak** is not over $1/6$ width by not over $1/3$ length of surface. (d) A **large pitch streak** is not over $1/4$ width by $1/2$ length of surface. (e) A **very large pitch streak** is over $1/4$ width by $1/2$ length of surface.

PITH

439. **Pith** is small soft core in structural center of log. (a) **Very small pith** is not over $1/8''$ wide and occupies on face surface not over $1/4$ square inch ($1/8''$ wide by $2''$ long or $1/16''$ by $4''$.) (b) **Small pith** occupies not over $3/4$ square inch ($1/4''$ by $3''$, $3/16''$ by $4''$, $1/8''$ by $6''$, or $1/16''$ by $12''$.) (c) **Free of pith** or **free of heart centers** is pithless or absence of pith on or within body of piece.

SHAKES

440. A shake is a lengthwise grain separation between or through growth rings and may be classified as ring shake and pith shake. (a) A slight shake is not over $1/32''$ wide. (b) A medium shake is over $1/32''$, but not over $1/8''$ wide. (c) A through shake extends from one surface of a piece to opposite or adjoining surface. (d) A pith shake (or heart shake or heart check) extends through growth rings from or through pith toward surface of piece, and can be distinguished from season check since its greatest width is nearest pith, whereas greatest width of a season check in a pith-centered piece is farthest from pith. (e) A ring shake occurs between growth rings to partially or wholly encircle the pith.

SPLITS

441. A split is a lengthwise grain separation extending from one surface of a piece to opposite or adjoining surface. (a) A very short split is not longer than $1/2$ width of piece. (b) A short split does not exceed in length either width of piece or $1/6$ length. (c) A medium split exceeds in length the width of piece but does not exceed $1/6$ length. (d) A long split exceeds $1/6$ length of piece.

STAIN

442. Stain is a discoloration on or in lumber other than its natural color. (a) Light stain is a slight difference in color which does not materially impair appearance of pieces if given a natural finish. (b) Medium stain is a pronounced difference in color which, although it does not obscure grain of wood, would customarily be objectionable in a natural but not in a painted finish. (c) Heavy stain is a difference in color so pronounced that it practically obscures grain of wood.

WANE

443. Wane is bark, or lack of wood from any cause, on surface of lumber. (a) A wane dip

extends across a surface to occupy full surface for a part of length. (b) A very short wane dip occupies full surface for not over 4" of length. (c) A short wane dip occupies full surface for not over 16" of length.

WARP

444. Warp is a variation from a true or plane surface and includes bow, crook, cup and twist, or any combination of these forms. Restrictions are based on average form of warp as it occurs normally, and any variation from this average form shall be appraised according to its equivalent damaging effect on piece in relation to normal. Such variation shall be cause for applying restrictions to any portion of length and for allowing less warp than specified if short bends and other unusual forms are involved. Pieces characterized by two or more forms not only shall be subject to limitations applicable to each kind but shall be appraised also according to combined damaging effect in determining amount to allow. (a) Very light warp is very light crook, cup or twist. (b) Light warp is light crook, cup or twist. (c) Medium warp is medium crook, cup or twist. (d) Heavy warp is heavy crook, cup or twist. (e) Very heavy warp is very heavy crook, cup or twist.

445. Bow is a deviation flatwise from a straight line from end to end of piece, and the amount of bow is greatest distance of surface from line. The amount permitted is as follows: (a) If under 2" thick, twice as much as amount of crook permitted in same grade. (b) If 2" thick and under 3", three times as much as amount of crook permitted in same grade. (c) If 3" thick and over, same as amount of crook permitted in same grade.

446. Crook is a deviation edgewise from a straight line from end to end of piece, and amount of crook is greatest distance of edge of piece from line. Very light, light, medium, heavy and very heavy crook as applied to each width and length shall conform to Standard Classifications of Crook, page 116.

447. Cup is deviation flatwise from straight line across width of piece, and amount of cup is greatest distance of surface from line.

	Width 2" & 3"	Width 4"	Width 5" & 6"	Width 8"	Width 10"	Width 12"
Very light cup.	$\frac{1}{32}"$	$\frac{1}{32}"$	$\frac{1}{32}"$	$\frac{1}{16}"$	$\frac{3}{32}"$	$\frac{1}{8}"$
Light cup.....	$\frac{1}{32}"$	$\frac{1}{32}"$	$\frac{1}{16}"$	$\frac{1}{8}"$	$\frac{3}{16}"$	$\frac{1}{4}"$
Medium cup..	$\frac{1}{32}"$	$\frac{1}{16}"$	$\frac{3}{32}"$	$\frac{3}{16}"$	$\frac{9}{32}"$	$\frac{3}{8}"$
Heavy cup....	$\frac{1}{32}"$	$\frac{1}{16}"$	$\frac{1}{8}"$	$\frac{1}{4}"$	$\frac{3}{8}"$	$\frac{1}{2}"$
Very heavy cup	$\frac{1}{16}"$	$\frac{3}{32}"$	$\frac{1}{16}"$	$\frac{5}{16}"$	$\frac{1}{2}"$	$\frac{5}{8}"$

448. Twist is deviation flatwise, or combination of flatwise and edgewise, in form of curl or spiral, and amount is distance an edge of piece at one end, is raised above a flat surface against which both edges at opposite end rest snugly. Very light, light, medium, heavy and very heavy twist as applied to each width and length shall conform to Standard Classifications of Twist, page 117.

CROOK—Standard Classifications of Crook

	Width 2"	Width 3"	Width 4"	Width 5" & 6"	Width 8"	Width 10 & 12"
4' { Very Light.	3/16"	5/32"	1/8"	3/32"	1/16"	1/32"
4' { Light.....	3/8	5/16	1/4	3/16	1/8	1/16
4' { Medium....	9/16	15/32	3/8	9/32	3/16	3/32
4' { Heavy.....	3/4	5/8	1/2	3/8	1/4	1/8
4' { Very Heavy	15/16	25/32	5/8	15/32	5/16	5/32
6' { Very Light.	1/4"	3/16"	5/32"	1/8"	3/32"	1/16"
6' { Light.....	1/2	3/8	5/16	1/4	3/16	1/8
6' { Medium....	3/4	9/16	15/32	3/8	9/32	3/16
6' { Heavy.....	1	3/4	5/8	1/2	3/8	1/4
6' { Very Heavy	1-1/4	15/16	25/32	5/8	15/32	5/16
8' { Very Light.	5/16"	1/4"	3/16"	5/32"	1/8"	3/32"
8' { Light.....	5/8	1/2	3/8	5/16	1/4	3/16
8' { Medium....	15/16	3/4	9/16	15/32	3/8	9/32
8' { Heavy.....	1-1/4	1	3/4	5/8	1/2	3/8
8' { Very Heavy	1-9/16	1-1/4	15/16	25/32	5/8	15/32
10' { Very Light.	7/16"	5/16"	9/32"	1/4"	7/32"	3/16"
10' { Light.....	7/8	5/8	9/16	1/2	7/16	3/8
10' { Medium....	1-5/16	15/16	27/32	3/4	21/32	9/16
10' { Heavy.....	1-3/4	1-1/4	1-1/8	1	7/8	3/4
10' { Very Heavy	2-3/16	1-9/16	1-13/32	1-1/4	1-3/32	15/16
12' { Very Light.	1/2"	3/8"	11/32"	5/16"	9/32"	1/4"
12' { Light.....	1	3/4	11/16	5/8	9/16	1/2
12' { Medium....	1-1/2	1-1/8	1-1/32	15/16	27/32	3/4
12' { Heavy.....	2	1-1/2	1-3/8	1-1/4	1-1/8	1
12' { Very Heavy	2-1/2	1-7/8	1-23/32	1-9/16	1-13/32	1-1/4
14' { Very Light.	11/16"	1/2"	7/16"	3/8"	5/16"	9/32"
14' { Light.....	1-3/8	1	7/8	3/4	5/8	9/16
14' { Medium....	2-1/16	1-1/2	1-5/16	1-1/8	15/16	27/32
14' { Heavy.....	2-3/4	2	1-3/4	1-1/2	1-1/4	1-1/8
14' { Very Heavy	3-7/16	2-1/2	2-3/16	1-7/8	1-9/16	1-13/32
16' { Very Light.	13/16"	5/8"	1/2"	7/16"	3/8"	5/16"
16' { Light.....	1-5/8	1-1/4	1	7/8	3/4	5/8
16' { Medium....	2-7/16	1-7/8	1-1/2	1-5/16	1-1/8	15/16
16' { Heavy.....	3-1/4	2-1/2	2	1-3/4	1-1/2	1-1/4
16' { Very Heavy	4-1/16	3/1-8	2-1/2	2-3/16	1-7/8	1-9/16
18' { Very Light.	1"	11/16"	9/16"	1/2"	7/16"	3/8"
18' { Light.....	2	1-3/8	1-1/8	1	7/8	3/4
18' { Medium....	3	2-1/16	1-11/16	1-1/2	1-5/16	1-1/8
18' { Heavy.....	4	2-3/4	2-1/4	2	1-3/4	1-1/2
18' { Very Heavy	5	3-7/16	2-13/16	2-1/2	2-3/16	1-7/8
20' { Very Light.	1-1/8"	3/4"	11/16"	5/8"	1/2"	7/16"
20' { Light.....	2-1/4	1-1/2	1-3/8	1-1/4	1	7/8
20' { Medium....	3-3/8	2-1/4	2-1/16	1-7/8	1-1/2	1-5/16
20' { Heavy.....	4-1/2	3	2-3/4	2-1/2	2	1-3/4
20' { Very Heavy	5-5/8	3-3/4	3-7/16	3-1/8	2-1/2	2-3/16
22' { Very Light.	1-1/4"	7/8"	13/16"	3/4"	5/8"	1/2"
22' { Light.....	2-1/2	1-3/4	1-5/8	1-1/2	1-1/4	1
22' { Medium....	3-3/4	2-5/8	2-7/16	2-1/4	1-7/8	1-1/2
22' { Heavy.....	5	3-1/2	3-1/4	3	2-1/2	2
22' { Very Heavy	6-1/4	4-3/8	4-1/16	3-3/4	3-1/8	2-1/2
24' { Very Light.	1-1/2"	1"	15/16"	7/8"	3/4"	5/8"
24' { Light.....	3	2	1-7/8	1-3/4	1-1/2	1-1/4
24' { Medium....	4-1/2	3	2-13/16	2-5/8	2-1/4	1-7/8
24' { Heavy.....	6	4	3-3/4	3-1/2	3	2-1/2
24' { Very Heavy	7-1/2	5	4-11/16	4-3/8	3-3/4	3-1/8

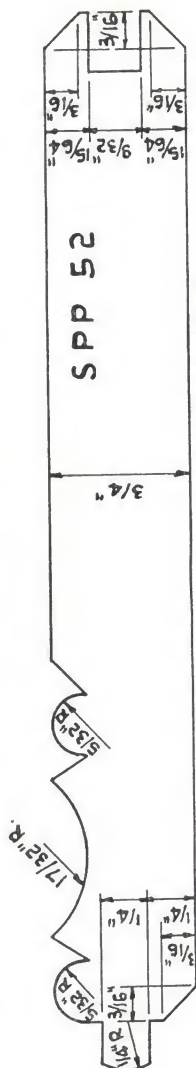
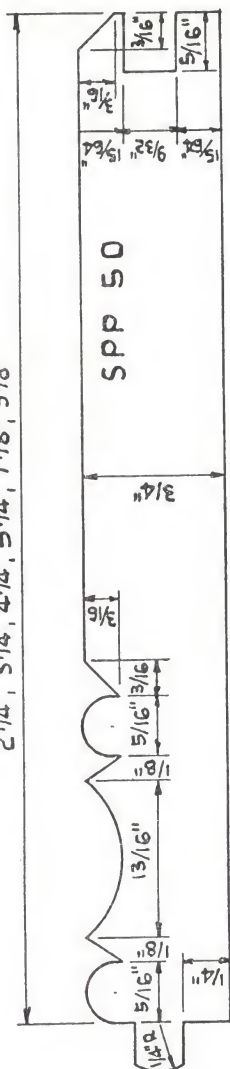
TWIST—Standard Classifications of Twist

	Width 2"	Width 3" & 4"	Width 5" & 6"	Width 8"	Width 10"	Width 12"
4' {	Very Light. 1/16"	1/8"	3/16"	1/4"	5/16"	3/8"
	Light..... 1/8	1/4	3/8	1/2	5/8	3/4
	Medium... 3/16	3/8	9/16	3/4	15/16	1-1/8
	Heavy..... 1/4	1/2	3/4	1	1-1/4	1-1/2
	Very Heavy 5/16	5/8	15/16	1-1/4	1-9/16	1-7/8
8' {	Very Light. 3/32"	3/16"	9/32"	3/8"	15/32"	9/16"
	Light..... 3/16	3/8	9/16	3/4	15/16	1-1/8
	Medium... 9/32	9/16	27/32	1-1/8	1-13/32	1-11/16
	Heavy..... 3/8	3/4	1-1/8	1-1/2	1-7/8	2-1/4
	Very Heavy 15/32	15/16	1-13/32	1-7/8	1-13/32	2-13/16
8' {	Very Light. 1/8"	1/4"	3/8"	1/2"	5/8"	3/4"
	Light..... 1/4	1/2	3/4	1	1-1/4	1-1/2
	Medium... 3/8	3/4	1-1/8	1-1/2	1-7/8	2-1/4
	Heavy..... 1/2	1	1-1/2	2	2-1/2	3
	Very Heavy 5/8	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4
10' {	Very Light. 5/32"	5/16"	15/32"	5/8"	25/32"	15/16"
	Light..... 5/16	5/8	15/16	1-1/4	1-9/16	1-7/8
	Medium... 15/32	15/16	1-13/32	1-7/8	2-11/32	2-13/16
	Heavy..... 5/8	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4
	Very Heavy 25/32	1-9/16	2-11/32	3-1/8	3-29/32	2-11/16
12' {	Very Light. 3/16"	3/8"	9/16"	3/4"	15/16"	1-1/8"
	Light..... 3/8	3/4	1-1/8	1-1/2	1-7/8	2-1/4
	Medium... 9/16	1-1/8	1-11/16	2-1/4	2-13/16	3-3/8
	Heavy..... 3/4	1-1/2	2-1/4	3	3-3/4	4-1/2
	Very Heavy 15/16	1-7/8	2-13/16	3-3/4	4-11/16	5-5/8
14' {	Very Light. 7/32"	7/16"	21/32"	7/8"	1-3/32"	1-5/16"
	Light..... 7/16	7/8	1-5/16	1-3/4	2-3/16	2-5/8
	Medium... 21/32	1-5/16	1-31/32	2-5/8	3-9/32	3-15/16
	Heavy..... 7/8	1-3/4	2-5/8	3-1/2	4-3/8	5-1/4
	Very Heavy 1-3/32	2-3/16	3-9/32	4-3/8	5-15/32	6-9/16
16' {	Very Light. 1/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"
	Light..... 1/2	1	1-1/2	2	2-1/2	3
	Medium... 3/4	1-1/2	2-1/4	3	3-3/4	4-1/2
	Heavy..... 1	2	3	4	5	6
	Very Heavy 1-1/4	2-1/2	3-3/4	5	6-1/4	7-1/2
18' {	Very Light. 9/32"	9/16"	27/32"	1-1/8"	1-13/32	1-11/16
	Light..... 9/16	1-1/8	1-11/16	2-1/4	2-13/16	3-3/8
	Medium... 27/32	1-11/16	2-17/32	3-3/8	4-7/32	5-1/16
	Heavy..... 1-1/8	2-1/4	3-3/8	4-1/2	5-5/8	6-3/4
	Very Heavy 1-13/32	2-13/16	4-7/32	5-5/8	7-1/32	8-7/16
20' {	Very Light. 5/16"	5/8"	15/16"	1-1/4"	1-9/16"	1-7/8"
	Light..... 5/8	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4
	Medium... 15/16	1-7/8	2-13/16	3-3/4	4-11/16	5-5/8
	Heavy..... 1-1/4	2-1/2	3-3/4	5	6-1/4	7-1/2
	Very Heavy 1-9/16	3-1/8	3-11/16	6-1/4	7-11/16	9-3/8
22' {	Very Light. 11/32"	11/16"	1-1/32	1-3/8	1-23/32	2-1/16
	Light..... 11/16	1-3/8	2-1/16	2-3/4	3-7/16	4-1/8
	Medium... 1-1/32	2-1/16	3-3/32	4-1/8	5-5/32	6-3/16
	Heavy..... 1-3/8	2-3/4	4-1/8	5-1/2	6-7/8	8-1/4
	Very Heavy 1-23/32	2-23/32	5-5/32	6-7/8	9-7/8	10-5/16
24' {	Very Light. 3/8"	3/4"	1-1/8"	1-1/2"	1-7/8"	2-1/4"
	Light..... 3/4	1-1/2	2-1/4	3	3-3/4	4-1/2
	Medium... 1-1/8	2-1/4	3-3/8	4-1/2	5-5/8	6-3/4
	Heavy..... 1-1/2	3	4-1/2	6	7-1/2	9
	Very Heavy 1-7/8	3-3/4	5-5/8	7-1/2	9-3/8	11-1/4

STANDARD PATTERNS OF PANELING

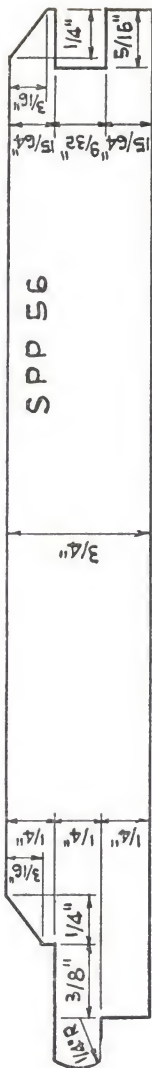
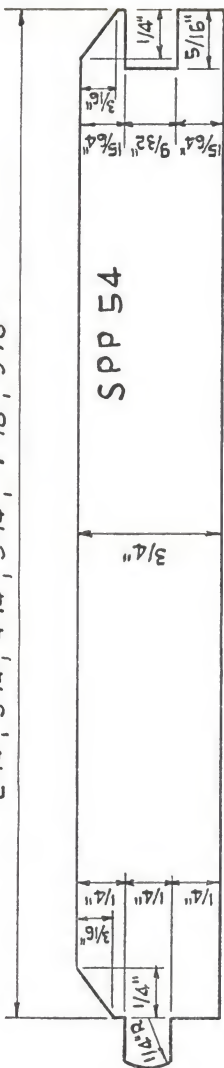
(Orders should specify pattern numbers.)

2 1/4", 3 1/4", 4 1/4", 5 1/4", 7 1/8", 9 1/8"



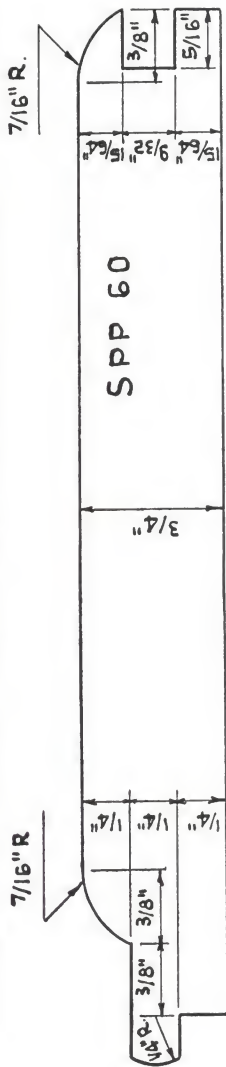
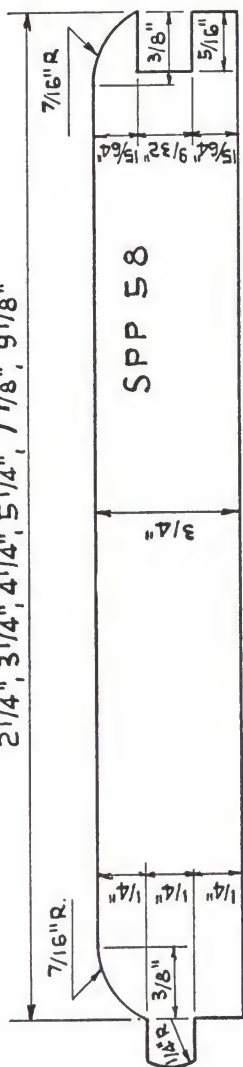
(Bottom side may be a grade lower than face grade required.)

2 1/4", 3 1/4", 4 1/4", 5 1/4", 7 1/8", 9 1/8"

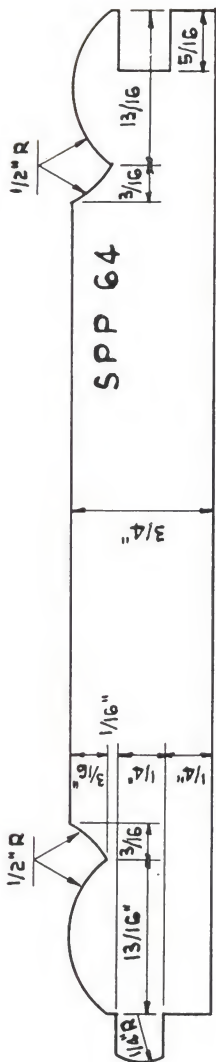
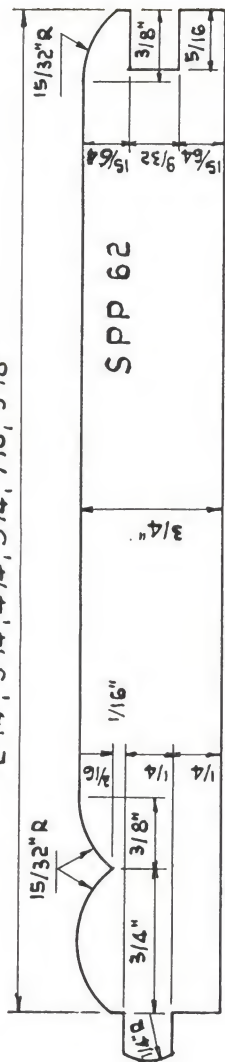


STANDARD PATTERNS OF PANELING — Continued
(Orders should specify pattern numbers.)

2 1/4", 3 1/4", 4 1/4", 5 1/4", 7 1/8", 9 1/8"



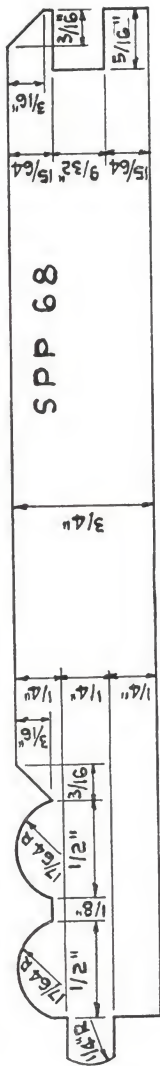
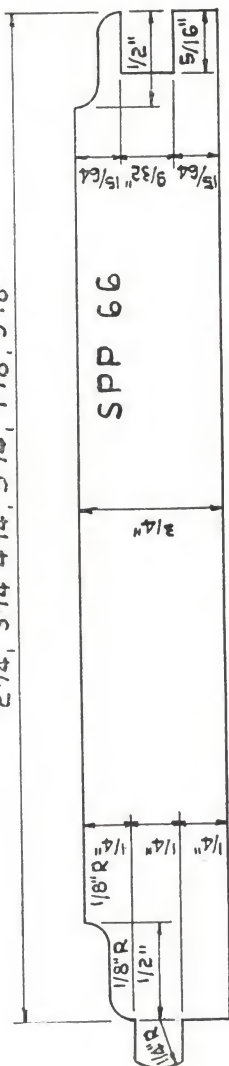
2 1/4", 3 1/4", 4 1/4", 5 1/4", 7 1/8", 9 1/8"



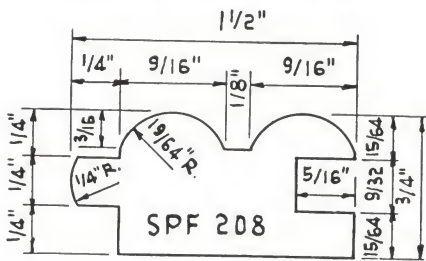
STANDARD PATTERNS OF PANELING — Continued

(Orders should specify pattern numbers.)

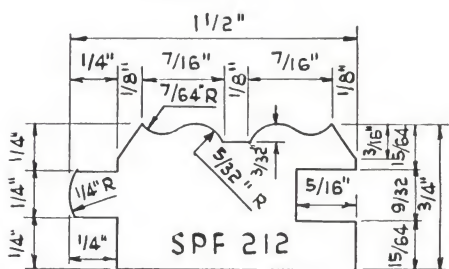
2 1/4" 3 1/4" 4 1/4" 5 1/4" 7 1/8" 9 1/8"



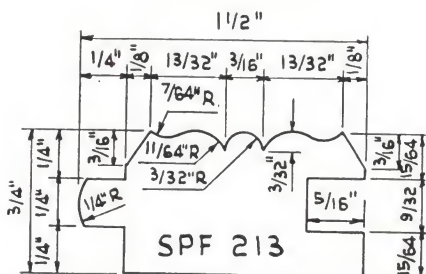
PANELING FILLETS
(Specify pattern numbers.)



(1X2)

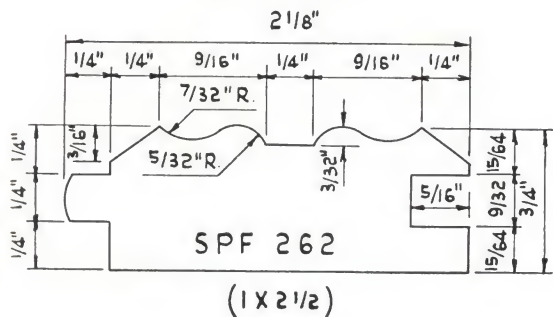
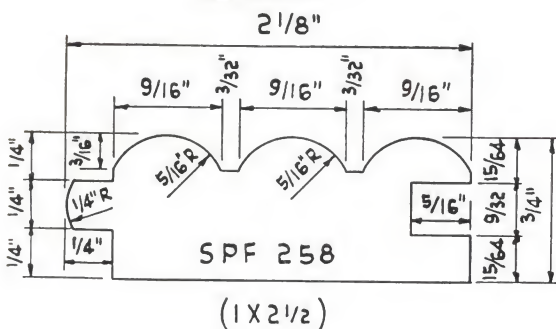
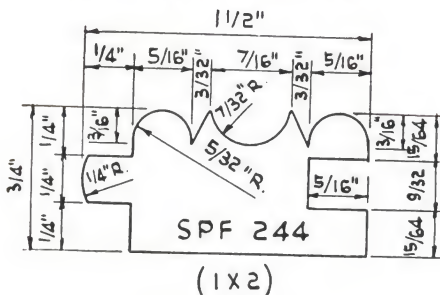


(1X2)

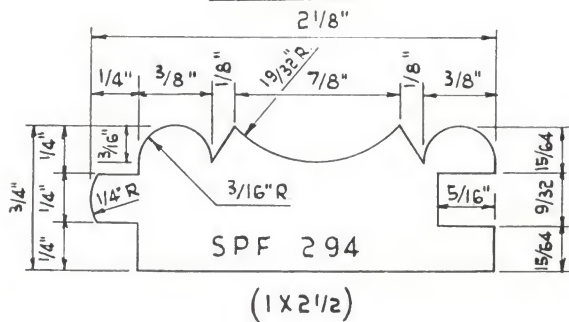
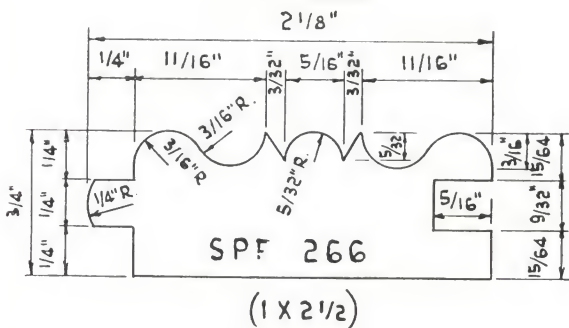
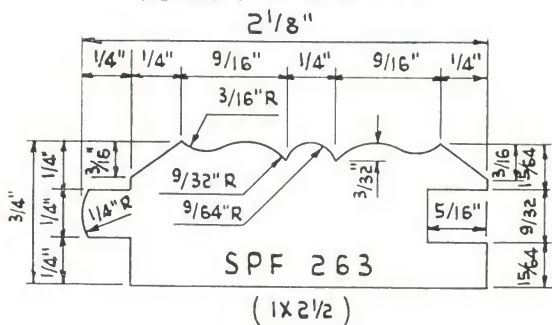


(1X2)

PANELING FILLETS (Specify pattern numbers.)

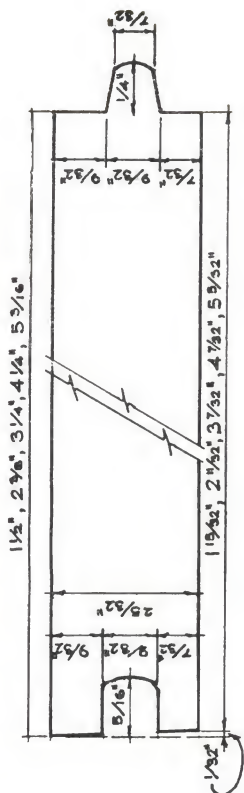


PANELING FILLETS (Specify pattern numbers.)

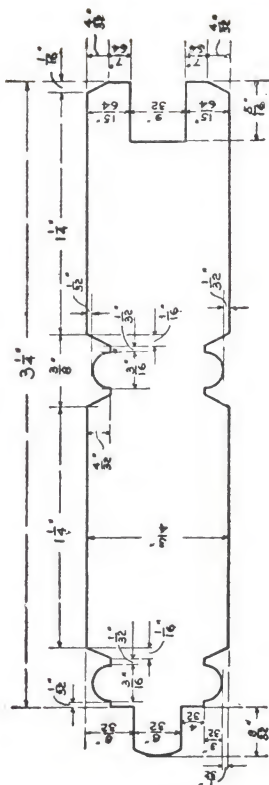


STANDARD PATTERNS OF FLOORING AND PARTITION

1" Flooring

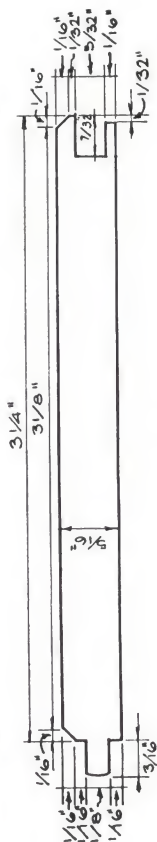


1x4 DB Partition

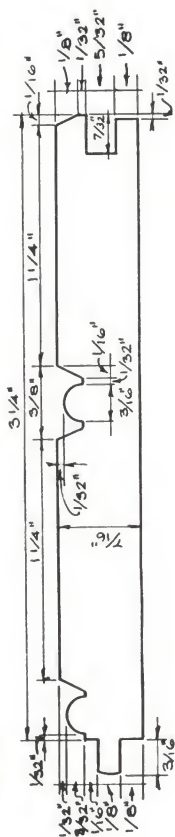


Technical drawing of a mechanical part, likely a bracket or support, showing dimensions in inches. The drawing includes a side view and a cross-sectional view. Key dimensions include overall length of $3 \frac{1}{4}$ inches, overall width of $1 \frac{1}{4}$ inches, and various radii and thicknesses such as $\frac{1}{32}$ inch, $\frac{1}{16}$ inch, $\frac{1}{8}$ inch, and $\frac{3}{8}$ inch.

3/8x4

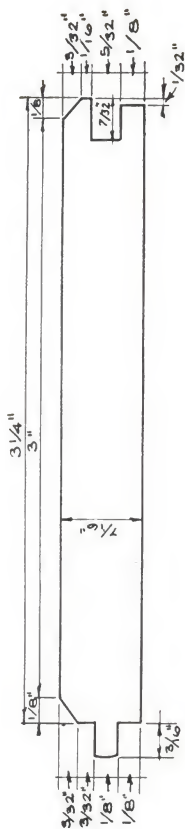


3/8x4

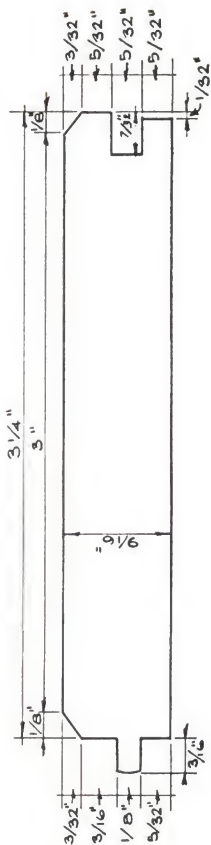


1/2x4

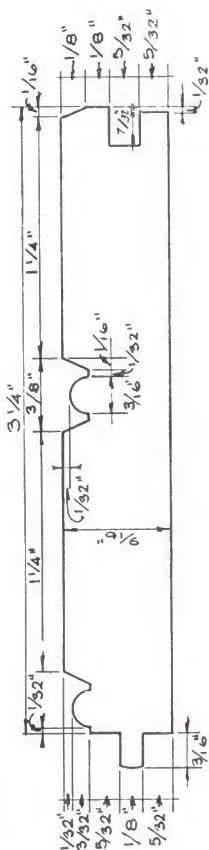
1/2x4 V Ceiling



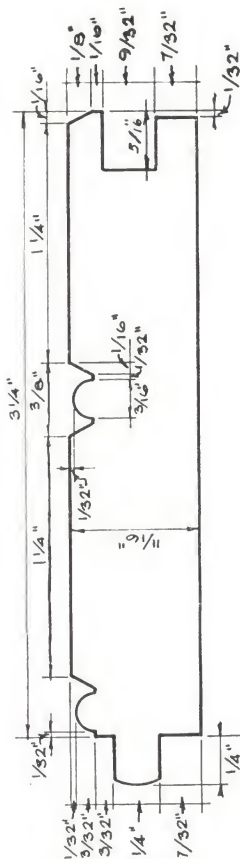
5/8x4 V Ceiling



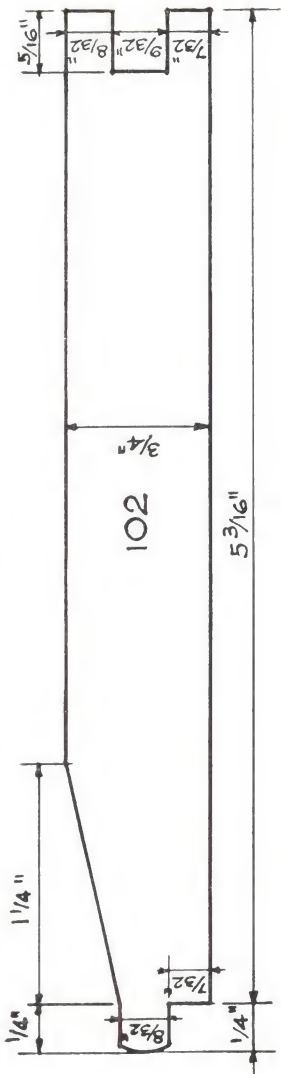
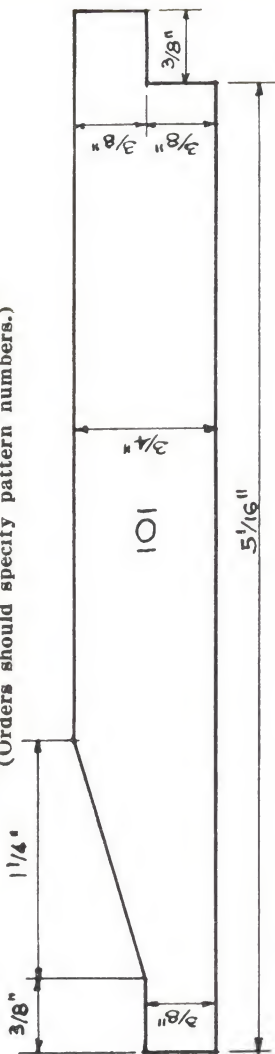
STANDARD PATTERNS OF CEILING — Continued



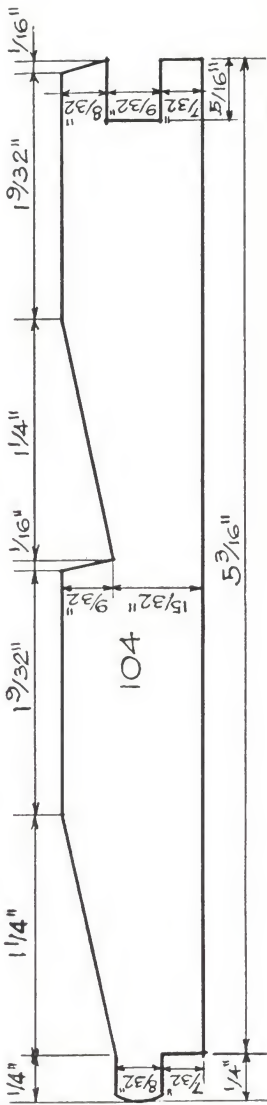
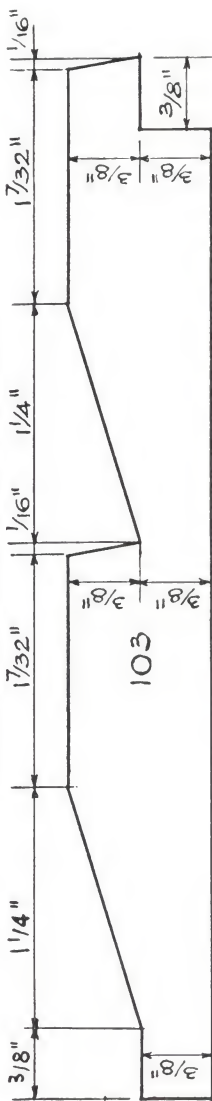
5/8x4 DB Ceiling

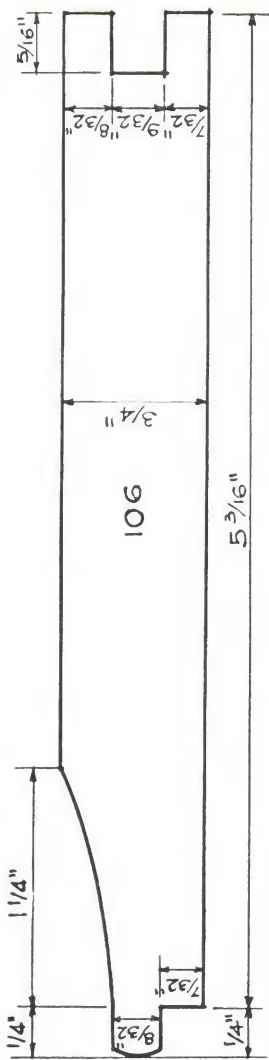
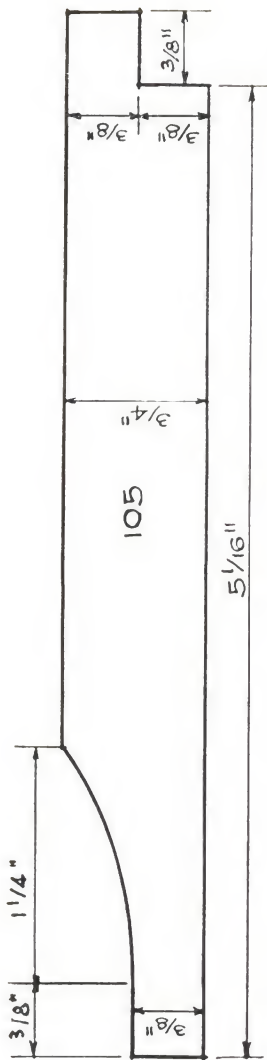


3/4" DB Ceiling

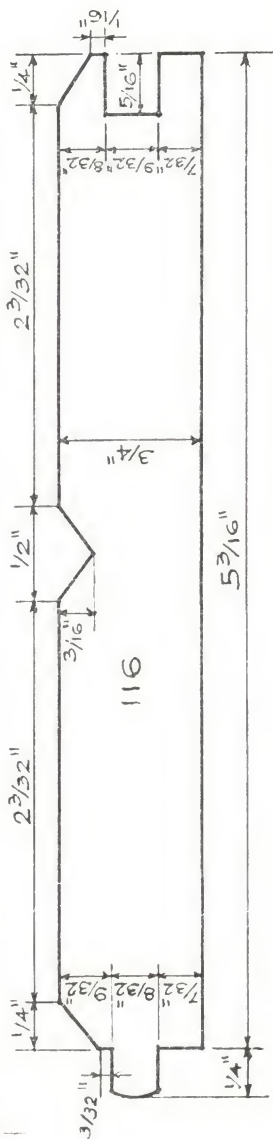
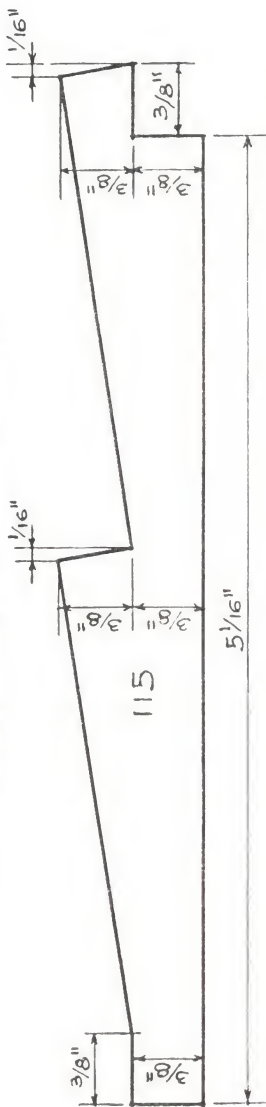


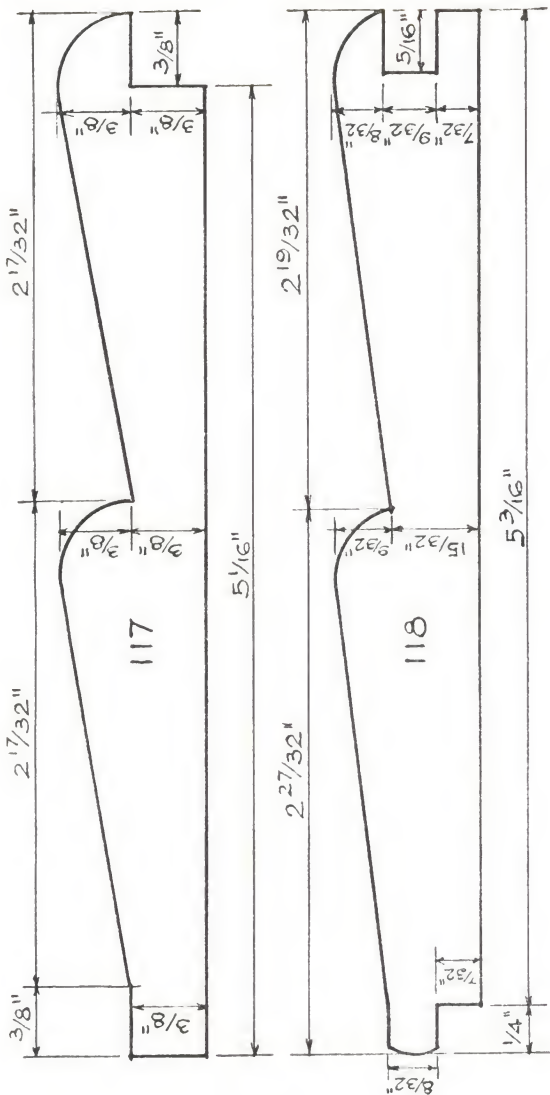
STANDARD PATTERNS OF DROP SIDING — Continued
(Orders should specify pattern numbers.)



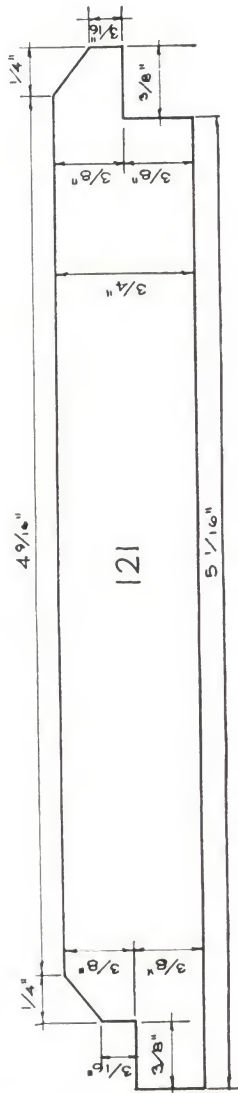
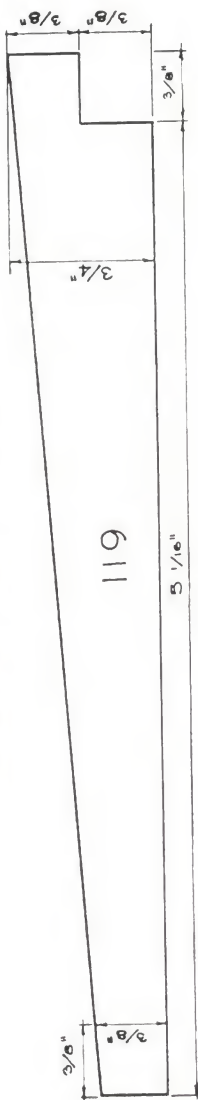


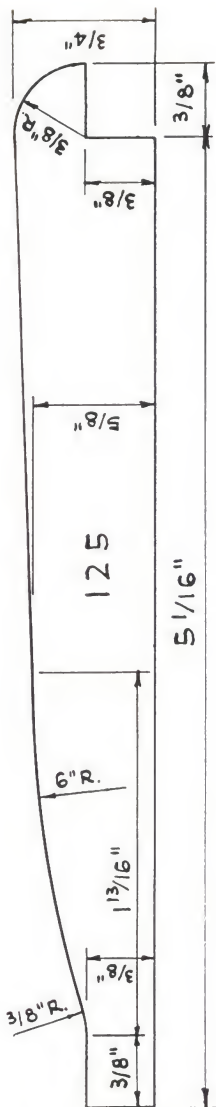
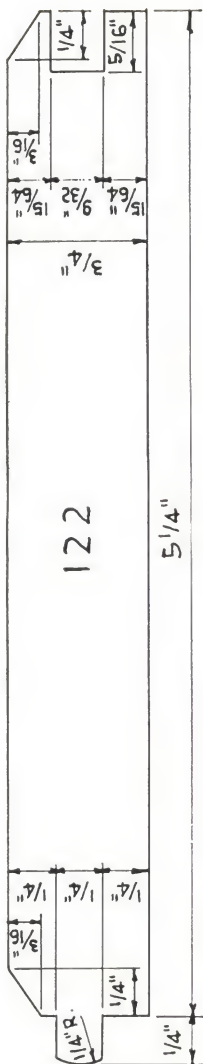
STANDARD PATTERNS OF DROP SIDING — Continued
(Orders should specify pattern numbers.)



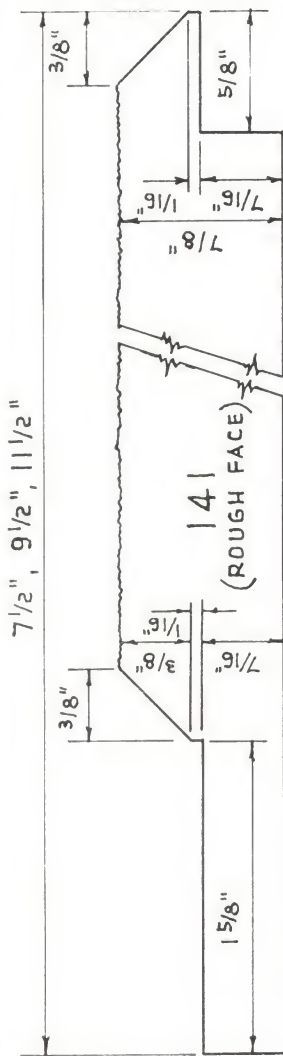
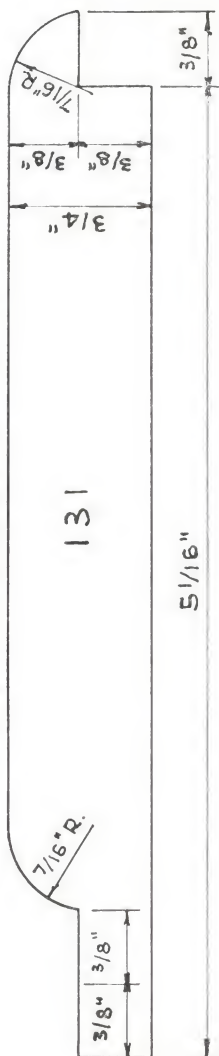


STANDARD PATTERNS OF DROP SIDING — Continued (Orders should specify pattern numbers.)

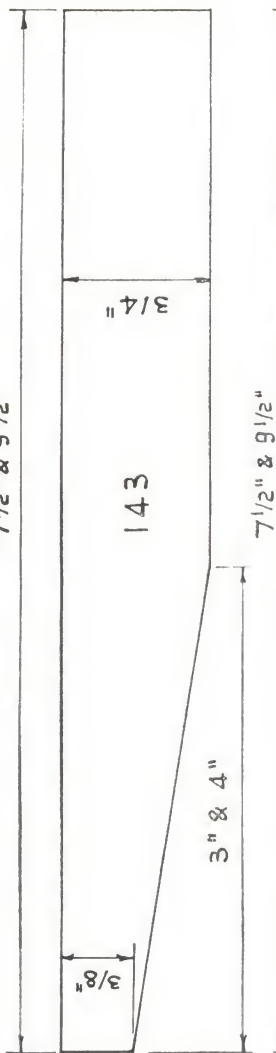




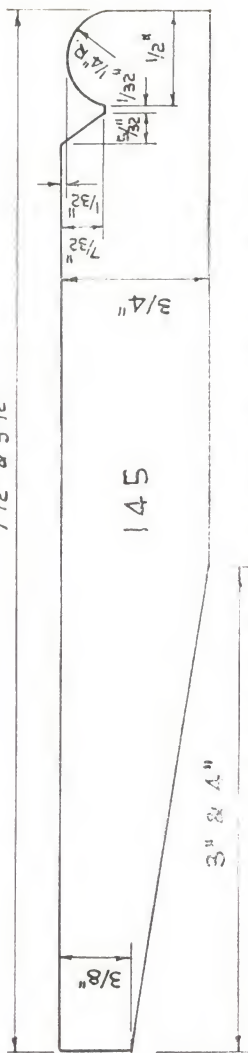
STANDARD PATTERNS OF DROP SIDING — Continued
(Orders should specify pattern numbers.)



7 1/2" & 9 1/2"



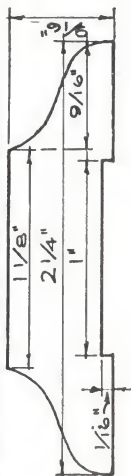
7 1/2" & 9 1/2"



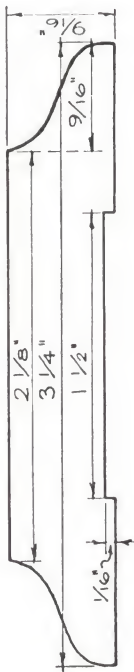
(The back-bearing areas are beveled 3" on 8" width and 4" on 10" to allow for 1 1/2" overlap on each width.)

STANDARD PATTERNS OF OG BATTS AND BEVEL SIDING

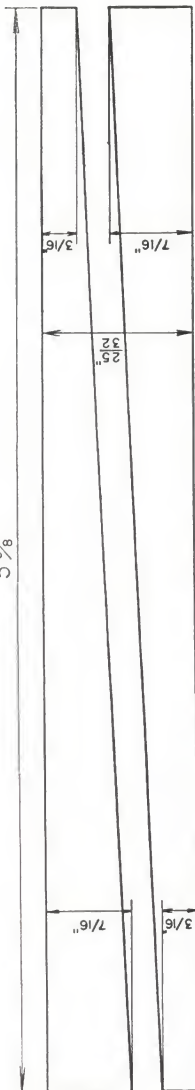
5/8x3 OG BATTS



5/8x4 OG BATTS

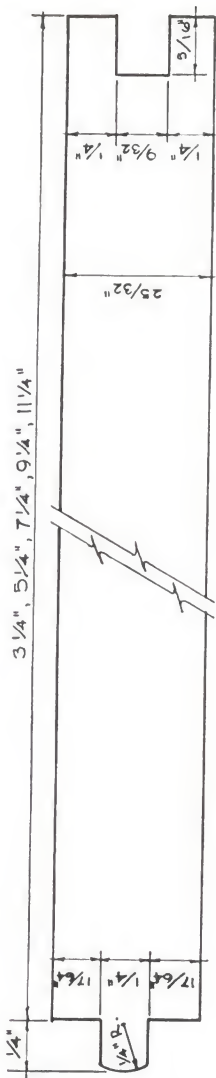
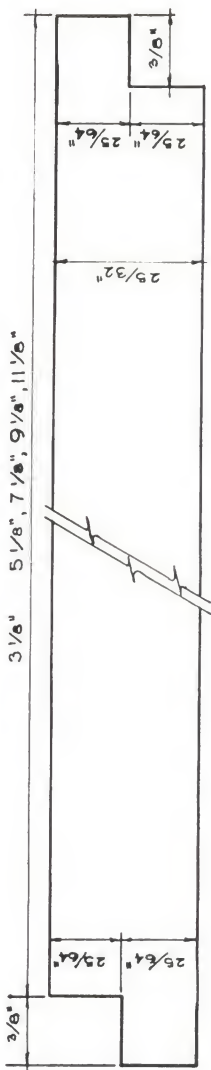


5 5/8"

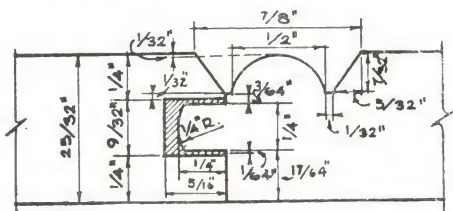


1/2x6 Bevel Siding

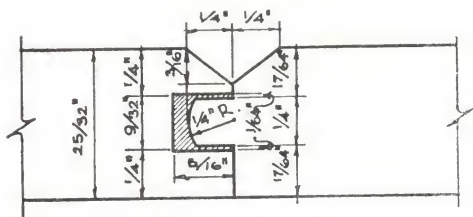
STANDARD 1" SHIPLAP AND S2S&CM



STANDARD BEAD AND V DETAILS

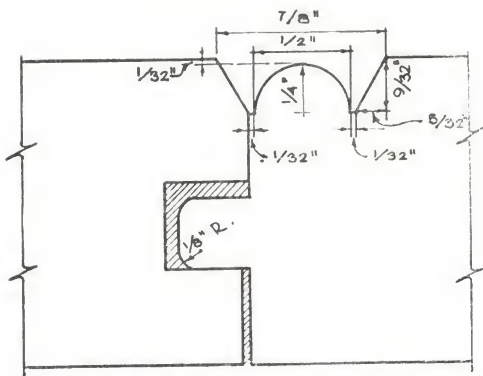


Barn Siding Bead (par. 192).



S2S&CM-EV1S

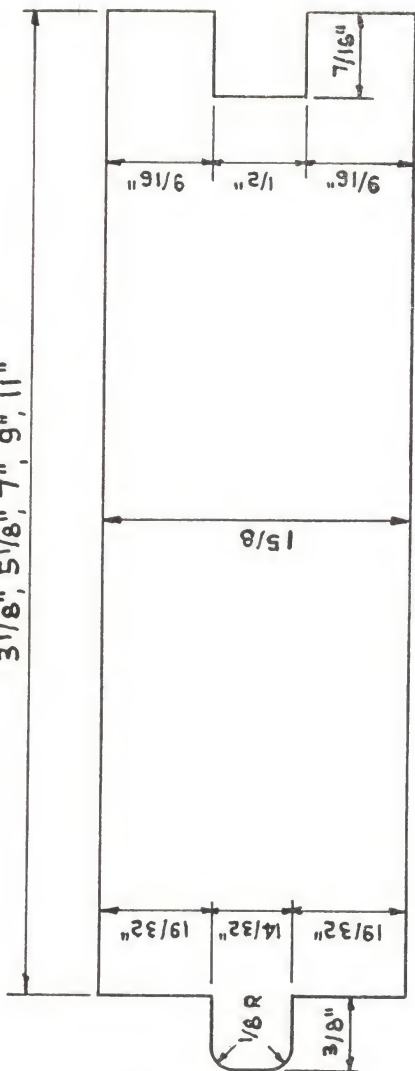
(Same V if 2" or over—par. 305.)



EB1S for any of the following patterns
of S2S&CM and S2S&SM.

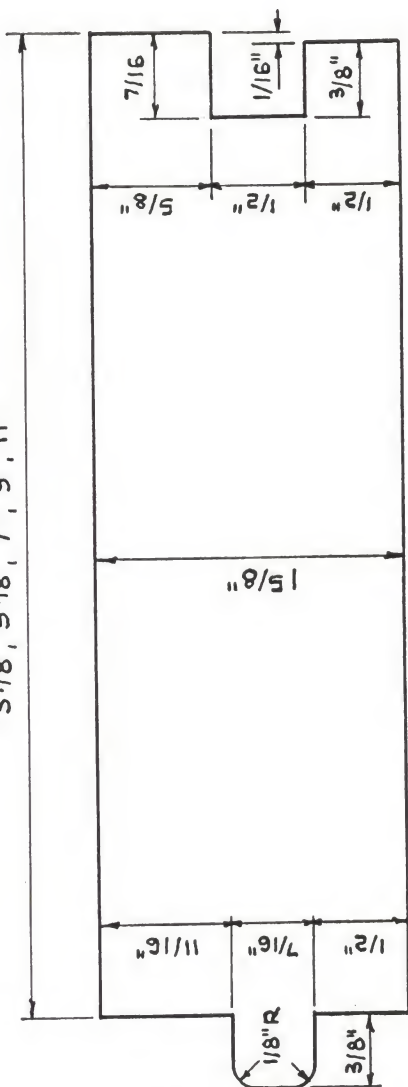
STANDARD 2" S2S&CM FLOORING OR DECKING
(Same tongue and groove for 2½".)

3⅛", 5⅛", 7", 9", 11"



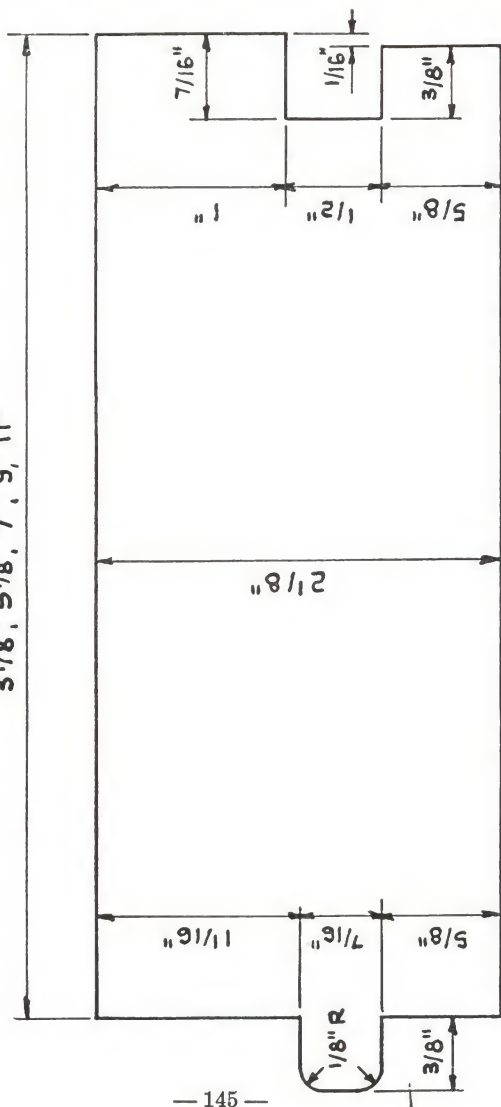
STANDARD 2" S2S&SM FLOORING OR DECKING

3 1/8", 5 1/8", 7", 9", 11"



STANDARD 2 1/2" S2S&SM FLOORING

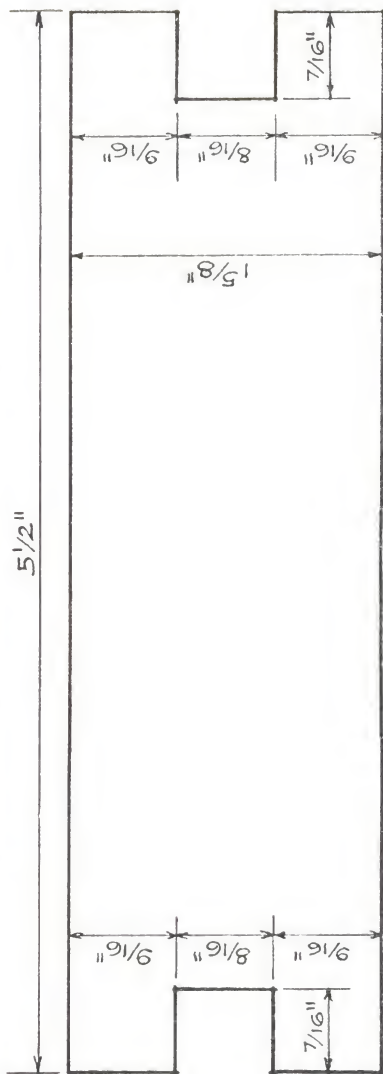
3 1/8" 5 1/8" 7" 9" 11"



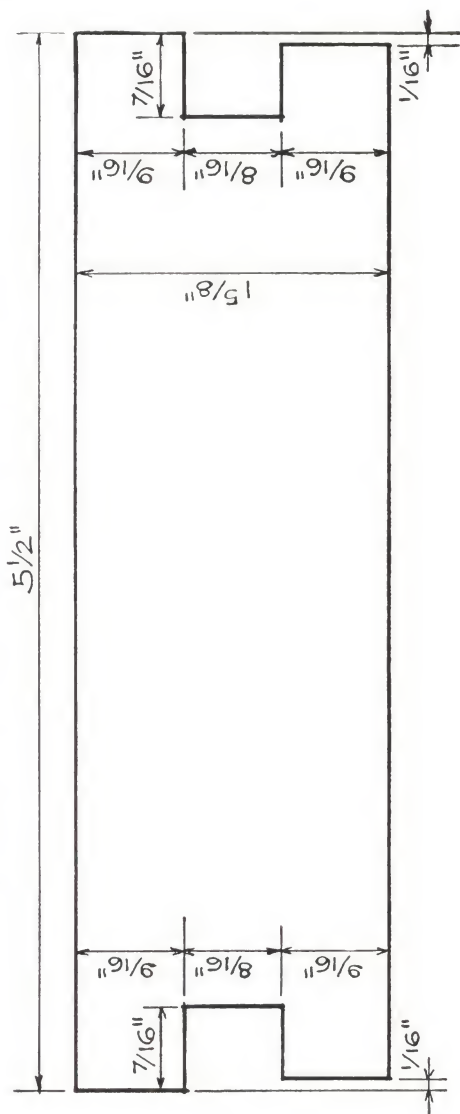
3 1/8", 5 1/8", 7", 9", 11"

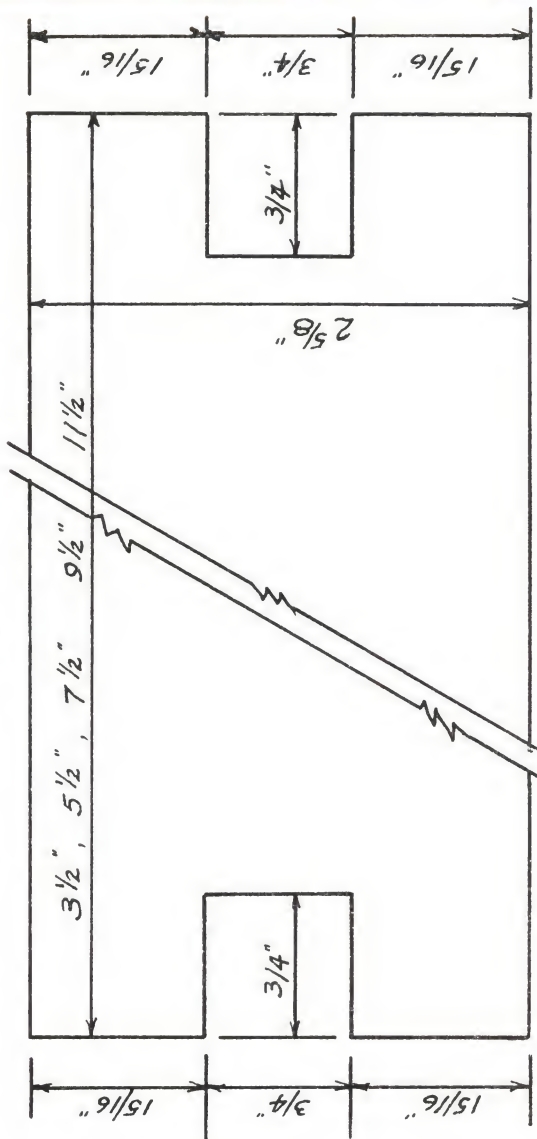


STANDARD 2" S2S&CG2E (GROOVED FOR SPLINES)



STANDARD 2" SIS&CG2E (GROOVED FOR SPLINES)

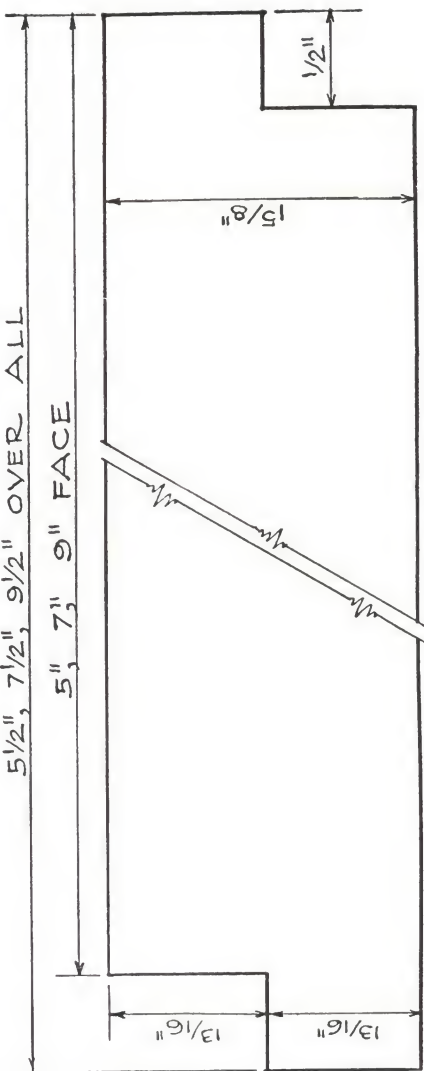




STANDARD 2" S2S&SL (HEAVY SHIPLAP)

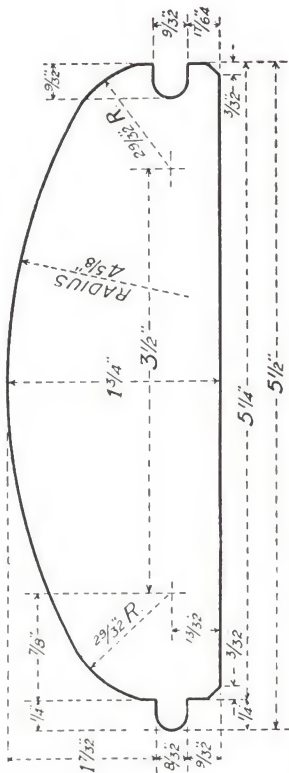
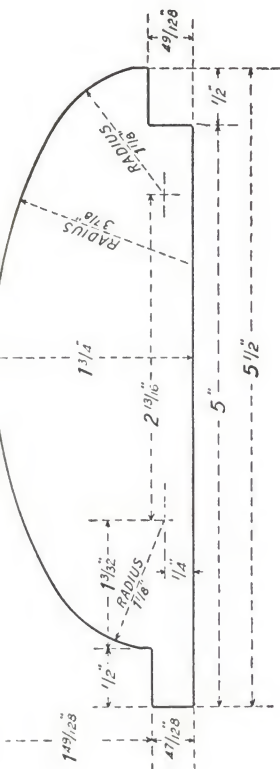
5 1/2", 7 1/2", 9 1/2" OVER ALL

5", 7", 9" FACE



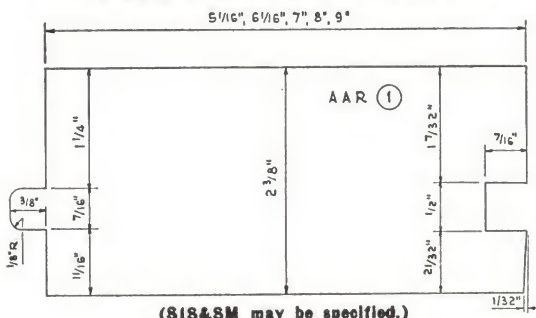
LOG CABIN SIDING

(Graded under 2" dimension rules.)



A. A. R. CAR LUMBER PATTERNS

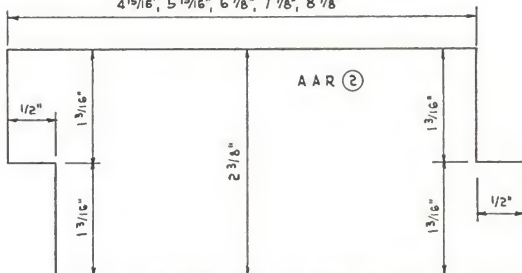
$2\frac{3}{4} \times 6, 7, 8, 9$ and 10 S2S&SM



(S1S&SM may be specified.)

$2\frac{3}{4} \times 6, 7, 8, 9$ and 10 S2S&SL

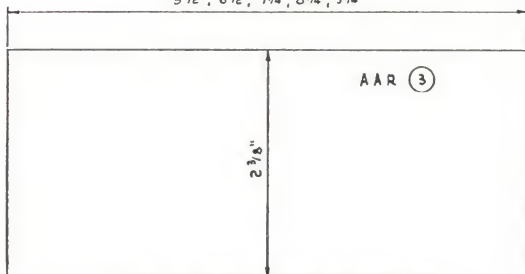
$4\frac{15}{16}"$, $5\frac{15}{16}"$, $6\frac{7}{8}"$, $7\frac{7}{8}"$, $8\frac{7}{8}"$



(S1S&SL may be specified.)

$2\frac{3}{4} \times 6, 7, 8, 9$ and 10 S4S

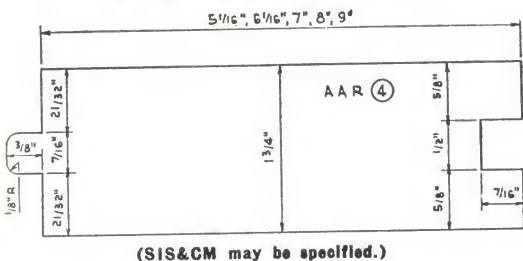
$5\frac{1}{2}"$, $6\frac{1}{2}"$, $7\frac{1}{4}"$, $8\frac{1}{4}"$, $9\frac{1}{4}"$



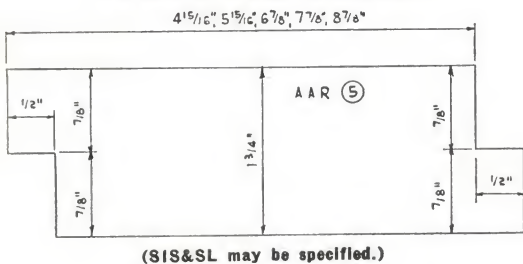
(Other dressing may be specified.)

A. A. R. CAR LUMBER PATTERNS

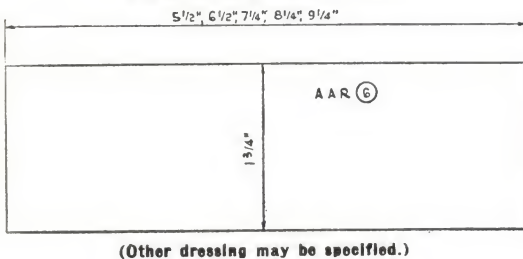
2 x 6, 7, 8, 9 and 10 S2S&CM



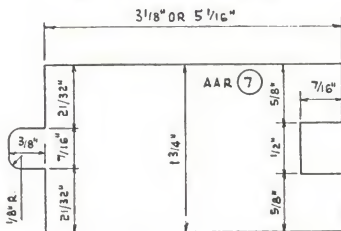
2 x 6, 7, 8, 9 and 10 S2S&SL



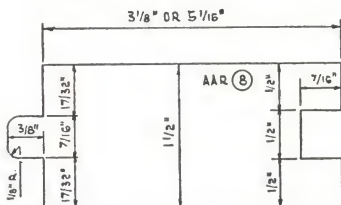
2 x 6, 7, 8, 9 and 10 S4S



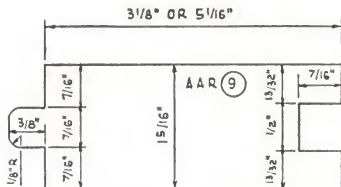
A. A. R. CAR LUMBER PATTERNS **2 x 4 and 6 S2S&CM**



$1\frac{3}{4}$ x 4 and 6 S2S&CM

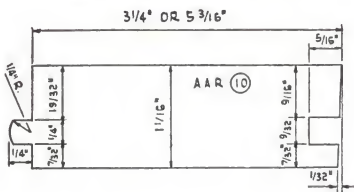


$1\frac{1}{2}$ x 4 and 6 S2S&CM

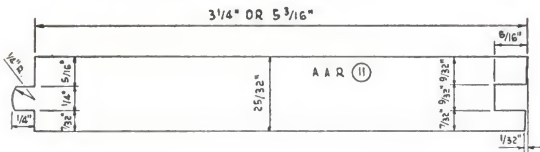


A. A. R. CAR LUMBER PATTERNS

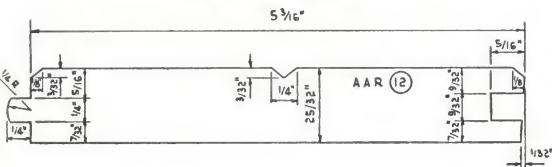
1 1/4 x 4 and 6 S2S & SM



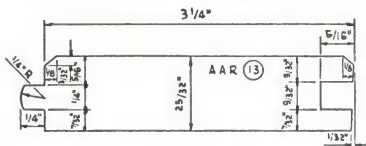
1 x 4 and 6 Lining and Roofing



1 x 6 Car Siding



1 x 4 Car Siding



AVERAGE WEIGHTS OF SOUTHERN PINE

(Standard Sizes Unless Otherwise Indicated)

Flooring		Longleaf	Shortleaf
1 x 3"	(For Hollow Back deduct 100 lbs.)	2000	1800
1 x 4"		2100	1900
1 1/4 x 3"		2200	2000
1 1/4 x 4"		2300	2100
Ceiling and Partition			
3/8" Ceiling (5/16")		1000	900
1/2" Ceiling (7/16")		1200	1100
5/8" Ceiling (9/16")		1500	1400
3/4" Ceiling and Boston Part. (11/16")		1800	1700
1" Partition (3/4")		1900	1800
Drop Siding			
1 x 6" (Pats. 116 and 121)		2000	2000
1 x 8" and 10" (Pats. 116 and 121)		2100	2100
1 x 6" (Pat. 117)		1700	1700
1 x 8" and 10" (Pat. 117)		1800	1800
1 x 6" (other patterns)		1800	1800
1 x 8" and 10" (other patterns)		1900	1900
Bevel and SE Siding from 1"		1100	1000
Bevel and SE Siding from 1 1/4"		1400	1300
Finish			
1 x 2" to 1 x 10" S1S or S2S 25/32"		2600	2500
1 x 12" S1S or S2S 25/32"		2700	2600
1 x 2" to 1 x 10" S3S or S4S 25/32"		2500	2400
1 x 12" S3S or S4S 25/32"		2600	2500
1 1/4" x 2" to 2 x 10" S1S or S2S		2900	2800
1 1/4" x 12" to 2 x 12" S1S or S2S		3000	2900
1 1/4" x 2" to 2 x 10" S3S or S4S		2800	2700
1 1/4" x 12" to 2 x 12" S3S or S4S		2900	2800
1" FINISH dressed to 1 1/16" add.		100	100
2" FINISH dressed to 1 3/4" add.		200	200
1 x 2" to 2 x 10" Rough		3400	3200
1 x 12" to 2 x 12" Rough		3500	3300
Casing - Base - Jambs			
Moulded Casing, All widths		2100	2000
Moulded Base, All widths		2100	2000
Jambs—1"		2100	2100
Jambs—1 1/4 to 2"		2300	2200
Strips and Boards (1 inch)			
1 x 2" to 1 x 10" S1S or S2S 25/32"		2700	2500
1 x 12" S1S or S2S 25/32"		2800	2600
1 x 2" to 1 x 10" S3S or S4S 25/32"		2600	2400
1 x 12" S3S or S4S 25/32"		2700	2500
1 x 2" to 1 x 4" D&M		2100	1900
1 x 6" D&M or Shiplap		2400	2200
1 x 8" to 1 x 10" D&M or Shiplap		2500	2300
1 x 12" D&M or Shiplap		2600	2400
1 x 2" to 1 x 10" Rough		3400	3200
1 x 12" Rough		3500	3300
For 3/4", deduct from same working 25/32"		100	100
For 11/16", deduct from same working 25/32"		300	300
For 5/8", deduct from same working 25/32"		500	500
For 13/16", add to same working 25/32"		100	100
For resawing, deduct for each cut		200	200
For Ripping, No deduction			
For 1 1/4" and 1 1/2", add.		300	300

AVERAGE WEIGHTS—Continued

2" Dimension, Factory Flooring and Roof Decking

	Longleaf	Shortleaf
2 x 2" to 2 x 8" Rough.....	3400	3300
2 x 10" & 2 x 12" Rough.....	3500	3400
2 x 2" to 2 x 8" Dressed to 1 $\frac{5}{8}$ ".....	2700	2500
2 x 10" & 2 x 12" Dressed to 1 $\frac{5}{8}$ ".....	2800	2600
For 1 $\frac{3}{4}$ " add.....	400	400
For D&M, SL & Gr. for Splines, deduct...	200	200
2 x 4" to 2 x 12" Rough green.....	4500	4500
2 x 4" to 2 x 12" green, dressed 1 $\frac{5}{8}$ ".....	3800	3800

Heavy Joists, Timbers, etc. (over 2" thick)

Rough, green.....	4500	4500
S4S $\frac{1}{4}$ " scant, green.....	4200	4200
S4S $\frac{3}{8}$ " scant, green.....	4000	4000
S4S $\frac{1}{2}$ " scant, green.....	3800	3800
T&G—S2S&SL and S2S&CG2E, deduct...	300	300

Car Siding, Lining and Roofing

1 x 4" & 1 x 6" T&G 1 $\frac{3}{16}$ ".....	2200	2200
1 x 4" & 1 x 6" S2S 1 $\frac{3}{16}$ ".....	2600	2600
For 1 $\frac{1}{2}$ " deduct.....	100	100

Longitudinal Sheathing and Stock Car Slats

2 x 4" T&G 1 $\frac{3}{4}$ ".....	2400	2400
2 x 4" T&G 1 $\frac{5}{8}$ ".....	2300	2300
2 x 4" T&G 1 $\frac{1}{2}$ ".....	2100	2100
2 x 4" S2S to 1 $\frac{3}{4}$ ".....	2900	2900
2 x 4" S2S to 1 $\frac{5}{8}$ ".....	2700	2700
2 x 4" S2S to 1 $\frac{1}{2}$ ".....	2500	2500
2 x 6" T&G to 1 $\frac{3}{4}$ ".....	2500	2500
2 x 6" T&G to 1 $\frac{5}{8}$ ".....	2400	2400
2 x 6" T&G to 1 $\frac{1}{2}$ ".....	2200	2200
2 x 6" S2S to 1 $\frac{3}{4}$ ".....	2900	2900
2 x 6" S2S to 1 $\frac{5}{8}$ ".....	2700	2700
2 x 6" S2S to 1 $\frac{1}{2}$ ".....	2500	2500

Car Decking

2 x 6" & 2 x 8" S2S & T&G 1 $\frac{3}{4}$ " dry.....	2800	2600
2 $\frac{1}{2}$ x 6" to 3 x 8" S2S & T&G dry.....	2900	2700
2 x 6" to 3 x 8" S2S & T&G green.....	3500	3500
2 x 6" to 3 x 8" S2S dry.....	3200	3000
2 x 6" to 3 x 8" S2S green.....	4200	4200
2 x 6" to 3 x 8" S1S $\frac{1}{8}$ " scant dry.....	3400	3200
2 x 6" to 3 x 8" rough dry.....	3600	3400
2 x 6" to 3 x 8" rough green.....	4500	4500

Miscellaneous

Plaster Lath, 48" KD.....	500	500
Plaster Lath, 48" Green.....	1000	1000
Plaster Lath, 32" KD.....	340	340
Fence Lath, $\frac{1}{2}$ " x 1 $\frac{1}{2}$ "—48" KD.....	800	800
Fence Lath, $\frac{1}{2}$ " x 1 $\frac{1}{2}$ "—48" Green.....	1500	1500
Bed Slats, 1 x 3"—4' 6", per set of 8.....	20	20
Bed Slats, 1 x 3"—3' 3", per set of 8.....	15	15

The average weights shown are based upon test weights made upon large quantities of each item.

ABBREVIATIONS

These abbreviations are commonly used in the Southern Pine industry in the form indicated, but variations, such as in the use of upper and lower case type and in the use or omission of periods in the punctuation, are optional.

AD—air dried	Dim.—dimension
ADF—after deducting freight	Dkg.—decking
ALS—American Lumber Standards	D/Sdg—drop siding
AST—anti-stain treated	D1S and D2S—See S1S and S2S
avg.—average	EB1S—edge bead on one side
*B1S—See EB1S, CB1S and E&CB1S	EB2S—edge bead on two sides
*B2S—See EB2S, CB2S and E&CB2S	EE—eased edges
B&B—B and better	EG—edge (vertical or rift) grain
B&S—beams and stringers	EM—end matched
bd.—board	EV1S—edge V on one side
bd. ft.—board feet	EV2S—edge V on two sides
bdl.—bundle or bundled	E&CB1S—edge and center bead on one side
B/L—bill of lading	E&CB2S—edge and center bead on two sides
b.m.—board measure	E&CV1S—edge and center V on one side
Bev.—bevel or bevelled	E&CV2S—edge and center V on two sides
CB1S—center bead on one side	FA—facial area
CB2S—center bead on two sides	Fac—factory
CC—cubical content	FAS—free alongside (named vessel)
cft. or cu. ft.—cubic foot or feet	FBM—feet board measure
CG2E—center groove on two edges	FG—flat (slash) grain
CIF—cost, insurance and freight	Flg—flooring
CIFE—cost, insurance, freight and exchange	FOB—free on board (named point)
Clg—ceiling	FOHC—free of heart centers
Clr—clear	FOK—free of knots
CM—center matched	Fr. t.—freight
Com—common	ft.—foot or feet
Csg.—casing	G—girth
CV1S—center V on one side	GM—grade-marked
CV2S—center V on two sides	G/R—grooved roofing
**D&M—dressed and matched	HB—hollow back
DB Clg.—double beaded ceiling (E&CB1S)	Hrt.—heart
DB Part—double beaded partition (E&CB2S)	H&M—hit and miss
DET—double-end-trimmed	HorM—hit or miss
	in.—inch or inches
	Ind—industrial

See footnotes at the end of following page.

ABBREVIATIONS—Continued

J&P—joists and planks	S/Lap—shiplap
KD—kiln dried	SM—standard matched
lbr.—lumber	Specs.—specifications
LCL—less than carload	SR—stress rated
Lft.—lineal foot or feet	Std.—standard
Lin.—lineal	Std. lgths.—standard lengths
LL—Longleaf	SSND—sap stain no defect (stained)
Lng.—lining	STR—structural
M—thousand	SYP—Southern Yellow Pine
MBM—thousand (feet) board measure	S&E—side and edge (sur- faced on)
m. c.—moisture content	S1E—surfaced on one edge
Merch—Merchantable	S2E—surfaced on two edges
MG—medium grain	S1S—surfaced on one side
Mldg.—moulding	S2S—surfaced on two sides
Mft.—thousand feet	S1S1E—surfaced on one side and one edge
No.—number	S1S2E—surfaced on one side and two edges
N1E or N2E—nosed on 1 or 2 edges	S2S1E—surfaced on two sides and one edge
Ord.—order	S2S&CM—surfaced on two sides and center matched
Par.—paragraph	S2S&SL—surfaced on two sides and shiplapped
Part.—partition	S2S&SM—surfaced on two sides and standard matched
Pat.—pattern	S4S—surfaced on four sides
Pcs.—pieces	**T&G—tongued and grooved
PE—plain-end	VG—See edge grain
P&T—posts and timbers	*V1S—See EV1S, CV1S and E&CV1S
P1S and P2S—See S1S and S2S	*V2S—See EV2S, CV2S and E&CV2S
Reg.—regular	wdr.—wider
Rfg.—roofing	Wt.—weight
Rgh.—rough	YP—Yellow Pine
R/L—random lengths	
RES—resawn	
Sdg.—siding	
SE—square edge	
Sel.—select	
SE&S—Square Edge and Sound	

*This abbreviation should not be used in a purchase specification in a way that will cause uncertainty as to whether the special working should be on the edge, in the center, or both.

**This abbreviation should not be used in a purchase specification in a way that will cause uncertainty as to the kind of dressing and matching required.

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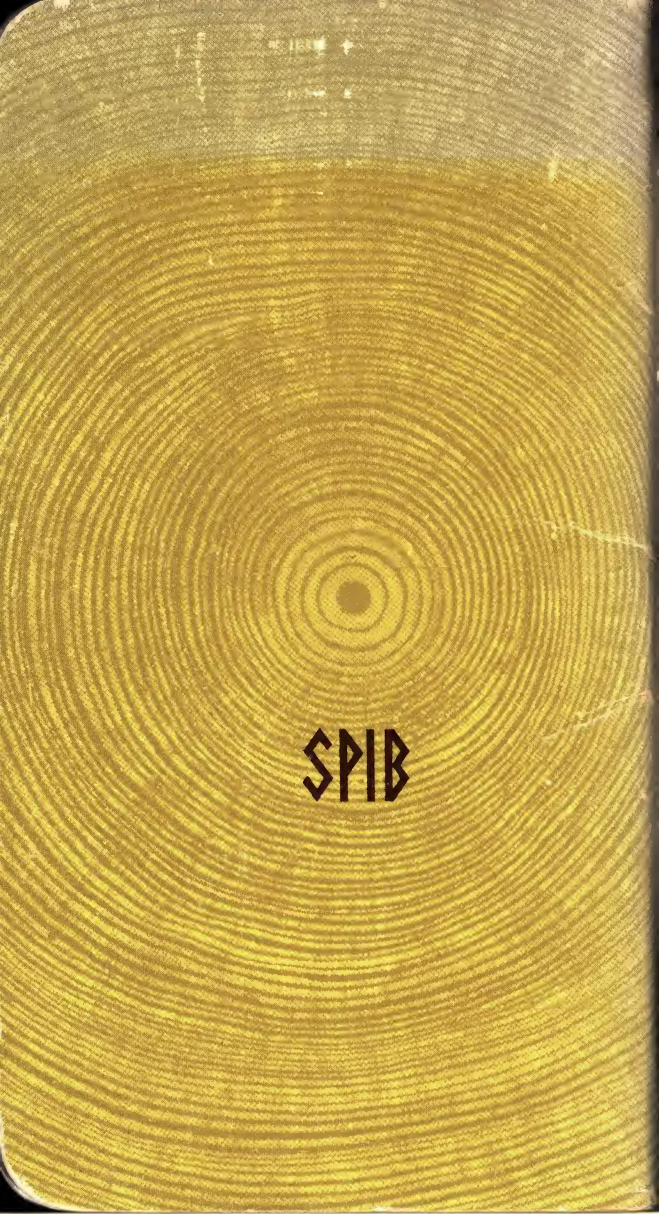
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